

AUSTRALIAN MUSEUM SCIENTIFIC PUBLICATIONS

Bruce, Niel L., 1987. Australian *Pleopodias* Richardson, 1910, and *Anilocra* Leach, 1818 (Isopoda: Cymothoidae), crustacean parasites of marine fishes. *Records of the Australian Museum* 39(2): 85–130. [5 May 1987].

doi:10.3853/j.0067-1975.39.1987.166

ISSN 0067-1975

Published by the Australian Museum, Sydney

nature culture **discover**

Australian Museum science is freely accessible online at
www.australianmuseum.net.au/publications/
6 College Street, Sydney NSW 2010, Australia



Australian *Plepodias* Richardson, 1910, and *Anilocra* Leach, 1818 (Isopoda: Cymothoidae), Crustacean Parasites of Marine Fishes

NIEL L. BRUCE *

Australian Museum,
P.O. Box A285, Sydney South, NSW 2000, Australia

ABSTRACT. The genus *Plepodias* is recorded from Australia for the first time. The genus is rediagnosed, and figures given for *Plepodias* sp. and *P. elongatus* Richardson. Twelve Australian species of *Anilocra* are described and figured: *A. alloceracea* Koelbel, *A. caudata* Bovallius, *A. dimidiata* Bleeker, *A. leptosoma* Bleeker, *A. longicauda* Schiödte & Meinert, *A. ankistra* n. sp., *A. apogonae* n. sp., *A. koolanae* n. sp., *A. morsicata* n. sp., *A. nemipteri* n. sp., *A. pomacentri* n. sp., and *A. soelae* n. sp. Additional figures and descriptive notes are given for *A. cavicauda* Richardson, that species being revalidated. *Anilocra carpentariensis* Avdeev is synonymised with *A. dimidiata*. Keys are provided for the Australian genera of the *Anilocra* group, and the Australian species of *Anilocra*.

BRUCE, N.L., 1987. Australian *Plepodias* Richardson, 1910, and *Anilocra* Leach, 1818 (Isopoda: Cymothoidae), crustacean parasites of marine fishes. Records of the Australian Museum 39(2): 85–130.

Recent studies of the Australian Cymothoidae were limited to the work of Hale (1926, 1940) and Avdeev (1975a,b,c, 1977, 1978, 1979a,b,c), the latter publishing on material collected around, but beyond Australian territorial waters. More recently, Bruce (1986) recorded 9 species of *Mothocya* from Australian waters. Prior to the work of Hale (1926) the only information available on Australian cymothoids was that to be found in the monographs of Schiödte & Meinert (1881, 1883, 1884). Other early works of relevance to the Australian cymothoid fauna are those dealing with the Indo-Pacific (Bleeker, 1857; Bovallius, 1887; Haller, 1880; Koelbel, 1878; Miers, 1880; Nierstrasz, 1915, 1918; Richardson, 1910). Some of these early publications (Haller, 1880; Miers, 1880) are of particular importance as they were not seen by Schiödte & Meinert, and the names proposed may have priority over those proposed by Schiödte & Meinert.

Up to and including Avdeev's publications, 45 species of Cymothoidae in nine genera had been recorded from waters around Australia. Of these, *Nerocila* and *Anilocra* were the only genera of the epidermal attaching lineage of Brusca (1981). Two species of *Anilocra* have

been recorded from Australia: *Anilocra cavicauda*, a misidentification of Hale (1926), and *A. carpentariensis* which is here synonymised with *A. dimidiata*. *Renocila* and *Nerocila* are well represented in Australian waters, and accounts of these two genera will be given in later publications.

Little is known about endemicity or distributional patterns of genera and species of Indo-Pacific Cymothoidae. Avdeev (1985) discussed the distribution of marine cymothoids but, as this present work and other recent publications (Williams & Williams, 1980, 1981; Bruce, 1986) have demonstrated, species richness within the Cymothoidae is far greater than previously suspected.

Methods

When host specimens have been available, identifications have been confirmed by the staff of the Australian Museum Fish Section. Host identifications of specimens not retained, or non-expert identifications are marked by an asterisk. Host identifications without the specimen have been given in the original combination in the 'Material examined' section, and the most recent combination in the 'Hosts' section.

* Present address: Queensland Museum, P.O. Box 300, South Brisbane, Qld 4101, Australia.

All pereopods within a species description are drawn to the same scale, as are all pleopods. All measurements are of length measured from the anterior margin of the cephalon to the apex of the pleotelson, and are in millimetres.

Material placed in the 'Additional material' section is that which has been identified as belonging to the species, but has not been studied in detail.

Abbreviations

AM	Australian Museum, Sydney, NSW, Australia
CSIRO	Commonwealth, Industrial and Scientific Research Organisation, Australia
MNHN	Muséum National d'Histoire Naturelle, Paris, France
NMV	Museum of Victoria, Melbourne, Australia
NRS	Naturhistoriska Riksmuseet, Stockholm, Sweden
NT	Northern Territory, Australia
NTM	Northern Territory Museum, Darwin, Australia
Qld	Queensland, Australia
QFS	Queensland Fisheries Service
QM	Queensland Museum, Brisbane
RMNH	Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands
SAM	South Australian Museum, Adelaide
USNM	Smithsonian Institution, Washington, D.C., U.S.A.
WA	Western Australia
WAM	Western Australian Museum, Perth
ZMC	Zoologisk Museum, Copenhagen.

Taxonomy

Brusca (1981) recognised three lineages within the Cymothoidae. Those genera related to *Anilocra* and *Nerocila* which attach to the hosts' outer body surface form the externally attaching lineage. The other two lineages are the buccal-gill attaching lineage and those

genera that burrow into the hosts flesh. Brusca (1981) considered the latter to be polyphletic. Although the *Anilocra* group of genera can be easily separated on ecological criteria, they can be distinguished from all other cymothoids by morphological characters as well. These characters are: body bilaterally symmetrical; cephalon weakly immersed in pereonite 1; body and appendages usually with abundant chromatophores; brood pouch with oostegites of pereonite 6 dominant (those of pereonites 2, 3, 4 and 6 subequal in other cymothoids) and with posterior pocket arising from sternite 7 (absent in other cymothoids); pereopods without laminar extensions to basis, without bulbous articles; pereopod 7 frequently with spines.

Three inadequately described genera of the epidermal-attaching lineage have been recorded from the Indo-Pacific. Brief remarks for these genera are given here to aid in their identification should they be found in Australia. They are not included in the generic key as none of these genera has been described in detail.

Amblycephalon Pillai, 1954: described in more detail by Pillai (1963). Monotypic; differing from *Anilocra* and *Pleopodias* by lacking reflexed rostrum and having posterior angles of coxae of pereonites 4–7 produced to posterior of their segment; *Nerocila* differs in having ventrolateral extensions on pleonites 1 and 2; *Renocila* differs in having posterolateral margins of pereonites 5–7 produced. Antennule, antenna and mandibles same as those of *Nerocila*. Recorded only from India (Pillai, 1963).

Plotor Schiödte & Meinert, 1881: monotypic; differing from *Nerocila* by lacking ventrolateral extensions on pleonites 1 and 2. Known only from Indian Ocean, 4°30'S, 137°E (Schiödte & Meinert, 1881).

Rosca Schiödte & Meinert, 1881. Two species have been placed in this genus: *R. limbata* Schiödte & Meinert, 1881, from Amboina, and *R. rogans* Stebbing, 1924. The type of the latter is an intermoult juvenile of *Nerocila orbignyi* (see Barnard, 1950). *Rosca limbata* differs from *Nerocila* by the cephalon posterior margin not being trilobed.

Key to Australian Genera of the *Anilocra* Group

1. Cephalon posterior margin trisinate; pleonites 1 and 2 with ventrolateral margins produced; body dorsoventrally flattened; coxae 5–7 as long or longer than respective pereonite. *Nerocila*
- Cephalon posterior margin straight or smoothly curved; pleonites 1 and 2 with ventrolateral margins not produced; body dorsal surface strongly vaulted; coxae 5–7 manifestly shorter than respective pereonite. 2
2. Cephalon without rostrum, or rostrum not projecting between antennule bases; antennule as long as, or longer than antenna; posterolateral margins of pereonites 5–7 produced; coxae 5–7 posteriorly acute. *Renocila*
- Rostrum folded back, lying between antennule bases; antennule shorter than antenna; posterolateral margins of pereonites 5–7 not produced; coxae posteriorly rounded. 3

3. Mandible palp article 3 shorter than article 2; maxilla with 2 short spines each on medial and lateral lobe, medial lobe partially fused to lateral; antennule articles 4–8 short (e.g. Fig. 5d, 10d); posterior of pleon about 0.7 width of pereon. *Anilocra*
- Mandible palp article 3 longer than article 2; maxilla with 2 large nodular spines each on medial and lateral lobe, medial lobe distinct; antennule articles 4–8 elongate (Fig. 1i); posterior of pleon about 0.35 width of pereon. *Pleopodias*

Pleopodias Richardson

Pleopodias Richardson, 1910: 25.—Barnard, 1936: 166.

Diagnosis of female. Cephalon posterior margin not trilobed; rostrum anterior margin folded back, concealing proximal article of antennule. Posterolateral margins of pereonites not produced. Coxae 2 and 3 as long as respective pereonite, coxae 4–7 narrow, always shorter than respective pereonite. Pleon much narrower than pereon, width of pleonites decreasing markedly towards posterior.

Antennule bases close set, both antennule and antenna dorsoventrally flattened, antennule articles 2 and 3 expanded; articles 4–8 elongate. Mandible palp article 3 slender, longer than article 2. Maxilla medial lobe distinct; 2 nodulose spines each on medial and lateral lobe respectively. Pleopods conspicuous in dorsal view, peduncles without accessory lobes; pleopods 1–4 with lamellar rami, endopod of pleopod 5 with 3 simple folds, exopod lamellar.

Additional characters. Eyes present, facets distinct. Pereon dorsum strongly vaulted, widest at pereonites 5 and 6; pereonite 2 shortest, 6 longest. Pleonites 1 and 2 with lateral and ventrolateral margins not produced. Pleotelson narrow, lateral margins bent up.

Maxillule with 3 terminal spines. Pereopods 1–4 short, progressively increasing in length; pereopods 5 and 6 longer than 1–4; pereopod 7 markedly longer than 6, and about 2.3 times longer than pereopod 1. Brood pouch formed by 2 large oostegites arising from pereonite 5, smaller oostegites on pereonites 1, 2, 3 and 4, and posterior pocket. Endopod of pleopods 1 and without, and 3–5 with proximomedial lobe; endopods of pleopods 1–5 progressively decreasing in length. Uropod peduncle and rami elongate.

Type species. *Pleopodias elongatus* Richardson, 1910, by monotypy.

Remarks. The genus *Pleopodias* has received little attention since it was established. Richardson (1911) described a second species from the tropical eastern Atlantic, *P. vigilans*, but gave no figures, nor further discussion on the genus. Barnard (1936) questioned the significance of characters used by Richardson to define the genus, correctly pointing out that several species of *Anilocra* have pleopods prominent in dorsal view and have antennule articles 2 and 3 expanded.

Examination of the type specimen of *P. elongatus* and the specimen from Western Australia revealed several

characters by which the two genera are separated. In *Pleopodias* these are: pleon narrowing strongly towards posterior, and much narrower than pereon (not posteriorly narrower in *Anilocra*); antennule articles 4–8 elongate (short in *Anilocra*); maxilla medial lobe distinct (partially fused in *Anilocra*); prominent and nodulose spines on the maxilla (small, simple spines in *Anilocra*); mandible palp article 3 slender, longer than article 2 (robust, shorter than article 2 in *Anilocra*); and pereopod 7 far more spinose than that of *Anilocra*.

Pleopodias sp.

Figs 1, 2

Pleopodias elongatus.—Barnard, 1936: 167, fig. 7f,g (not *P. elongatus* Richardson, 1910).

Material examined. Female (ovig 14.5, crushed in tube), 232 k north of Port Hedland, WA, 18°10'S, 118°18'E, 10 Oct 1982, depth 298–300 m, coll L. Marsh & S. Slack-Smith on FRV *Soela* (WAM 607-80).

Description. Rostrum strongly produced, lateral margins concave; eyes large, about 0.6 width of cephalon. Pleonite 5 about 0.4 width of pereonite 7. Pleotelson about 2.7 times as long as wide.

Antennule with 8 articles, 2 and 3 wide, 5–8 slender; extends to posterior of pereonite 1. Antenna with 13 articles, articles 1–3 short, 4–7 long, 8–13 becoming progressively shorter.

Mandible palp article 3, 3 times as long as wide. Maxilla medial lobe with 1 smooth spine and 1 nodulose spine, lateral lobe with both spines nodulose. Maxilliped article 3 with 3 spines.

Pereopods 1–3 with dactylus robust, without nodules. Pereopod 6 merus nearly twice as long as carpus; propodus posterior margin with scattered small spines. Pereopod 7 with medial surfaces of carpus and propodus densely covered with small spines.

Pleopod 1 peduncle slightly more than 4 times as long as wide, peduncles of pleopods 2–5 becoming progressively narrower towards posterior. Pleopod 1 rami distal margins rounded, pleopods 2–5 with rami becoming progressively narrower. Pleopod 2 with appendix masculina. Uropod peduncle about 4 times as long as wide; rami subequal in length, extending clearly beyond posterior of pleotelson.

Colour. Dark reddish brown in alcohol.

Size. 14.5–15.5 mm (Barnard, 1936).

Remarks. The specimen described here, while

undoubtedly distinct from *P. elongatus* cannot be described as a new species owing to its crushed condition. The Australian specimen differs from *P. elongatus* in being smaller in size, having a far narrower pleotelson, shorter rostrum, larger eyes, narrower pleopod peduncles, and retaining the appendix masculina. Barnard's (1936) figures agree well with

Western Australian material, and that record is here considered conspecific with the Australian specimen.

Hosts. Not known.

Distribution. Andaman Islands, north-eastern Indian Ocean (Barnard, 1936) and north-western Australia; to depths of 300 metres.

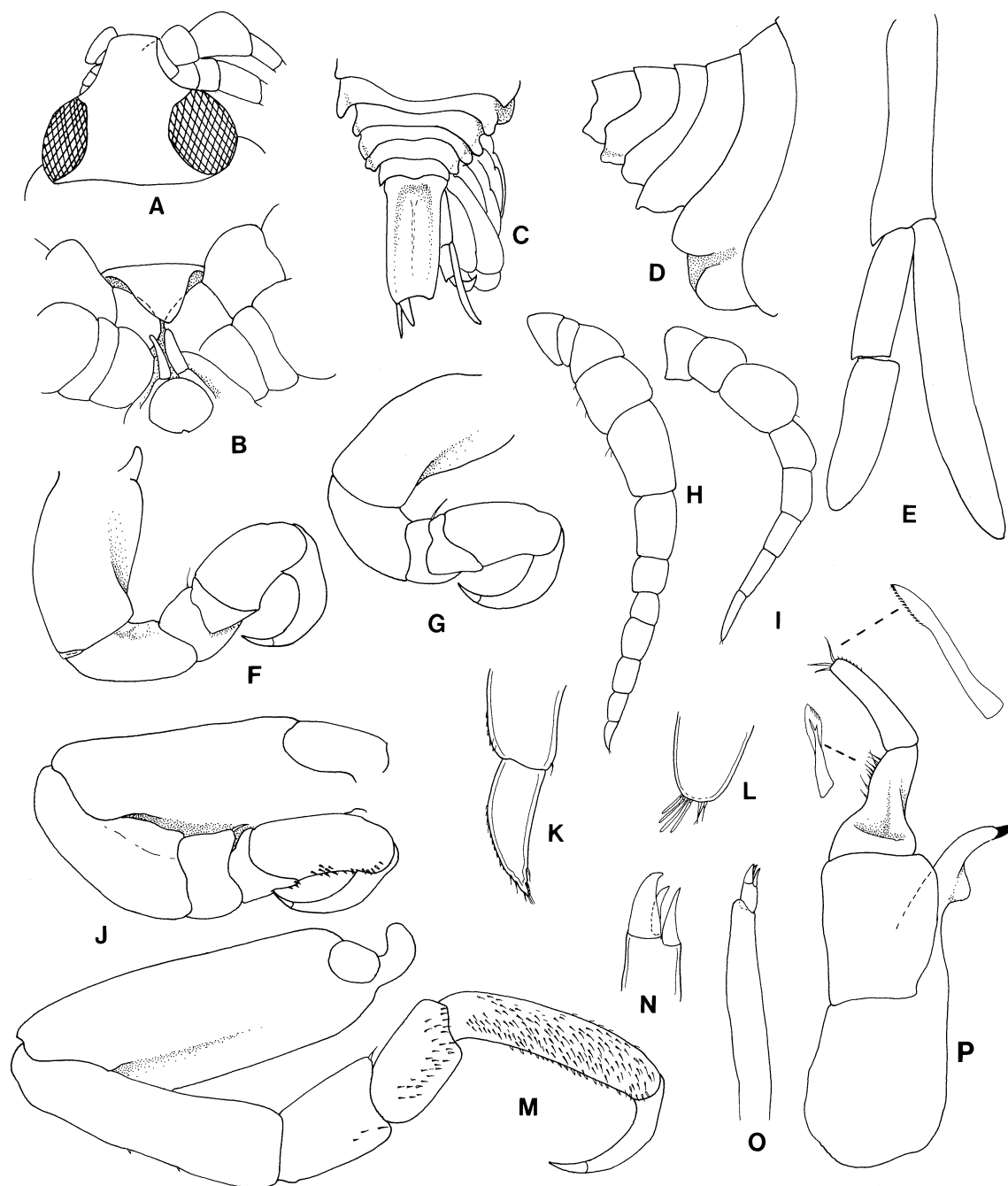


Fig. 1. *Pleopodias* sp. (WAM 607-80). A, cephalon; B, frons; C, pleon and pleotelson, dorsal view; D, pleon, lateral view; E, uropod; F, pereopod 1; G, pereopod 2; H, antenna; I, antennule; J, pereopod 6; K, antenna, terminal article; L, antennule, apex of terminal article; M, pereopod 7; N, maxillule apex; O, maxillule (apex creased); P, mandible.

Pleopodias elongatus Richardson

Fig. 3

Pleopodias elongatus Richardson, 1910: 26, fig. 25.—
Nierstrasz, 1931: 133.

Material examined. HOLOTYPE: female (ovig 20.0), off Motocot Point, Philippine Islands, 8 June 1908, 170 fathoms (= 306 m), coll U.S. Bureau of Fisheries *Albatross* Philippine Expedition 1907–08 (USNM 40917).

Descriptive notes. Body about 2.5 times as long as wide; lateral margins sub-parallel in dorsal view. Eyes about 0.5 width of cephalon; rostrum strongly produced, lateral margins weakly concave. Pleotelson about 1.6 times as long as wide, lateral margins weakly convex, posterior margin rounded.

Antennule bases not contiguous. Mandible palp article 2 with numerous setae along lateral margin. Maxilla medial lobe with 1 large conical spine and 1 small spine. Pereopods similar to those of *Pleopodias* sp. Pleopod 2 without appendix masculina.

Remarks. As discussed under the remarks for *Pleopodias* sp., *P. elongatus* is clearly distinct from the Indian Ocean species. Additional figures are given here to facilitate identification of the species.

Hosts. Not known.

Distribution. Philippine Islands.

Anilocra Leach

Anilocra Leach, 1818: 348, 350.—Desmarest, 1825: 306; Edwards, 1840: 255; Dana, 1853: 747; Schiödte & Meinert, 1881: 100; Gerstaecker, 1882: 231; Richardson, 1905: 25; Hale, 1926: 210; Schultz, 1969: 153; Kensley, 1978: 78; Kussakin, 1979: 281; Brusca, 1981: 140; Brusca & Iverson, 1985: 45.

Canolira Leach, 1818: 350.

Epichthyes Herklots, 1870: 122.

Diagnosis of female. Cephalon posterior margin weakly or not trilobed; rostrum anterior portion folded down and back, not concealing antennule basal articles. Coxae 2 and 3 as long as respective pereonite; coxae 4–7 narrow, much shorter than respective pereonite. Posterolateral margins of pereonites not produced. Pleonites all visible, pleon lateral margins sub-parallel or narrowing slightly towards posterior.

Mandible palp articles robust, article 3 setose, shorter than article 2. Pereopods 1–4 short, 5–6 longer; pereopod 7 markedly longer than 6, 1.7–2.9 times longer

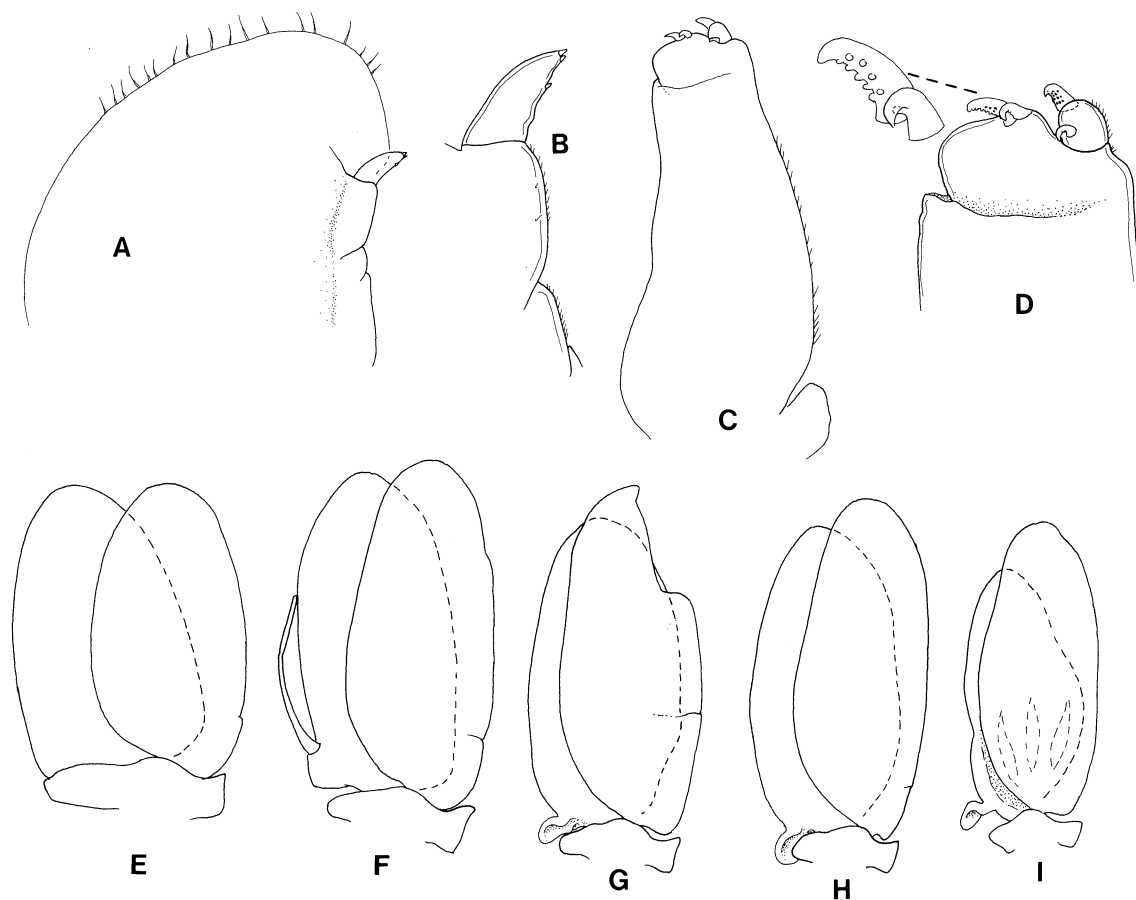


Fig. 2. *Pleopodias* sp. (WAM 607-80). A, maxilliped; B, maxilliped detail; C, maxilla; D, maxilla apex; E–I, pleopods 1–5 respectively.

than pereopod 1. Pleopods visible in dorsal view; peduncles without accessory lobes. Endopods of pleopods 1 without, and 3–5 with proximomedial lobe.

Additional characters. Pereon dorsum strongly vaulted, widest at pereonites 5 and 6; pereonite 2 shortest, 6 longest, pereonite 7 usually about 0.6 as long (0.45–0.81) as pereonite 6. Pleotelson longer than wide. Pleonite lateral and ventrolateral margins not produced.

Antennule usually with 8 articles, bases not contiguous; articles 1–3 more robust than remainder; articles 4–8 short. Antenna longer than antennule. Maxillule with 3 or 4 terminal spines. Maxilla medial lobe partially fused to lateral lobe, each lobe with 2 small

stout spines. Maxilliped article 3 with 3 or 4 short curved spines. Brood pouch formed by 2 large oostegites arising from pereonite 5, smaller oostegites from pereonites 1, 2, 3 and 4, and posterior pocket. Pleopods 1 and 2 each with lamellar rami, pleopods 3 and 4 usually with small folded lobes on posterior surface of endopod; pleopod 5 endopod with prominent folded lobes; endopod of pleopod 5 subtruncate. Endopods decreasing in length from pleopod 1 to pleopod 5. Uropod peduncle and rami elongate.

Male. Smaller, narrower than female; eyes proportionally larger. Pleon and pleotelson characters may not be developed. Appendages generally similar to

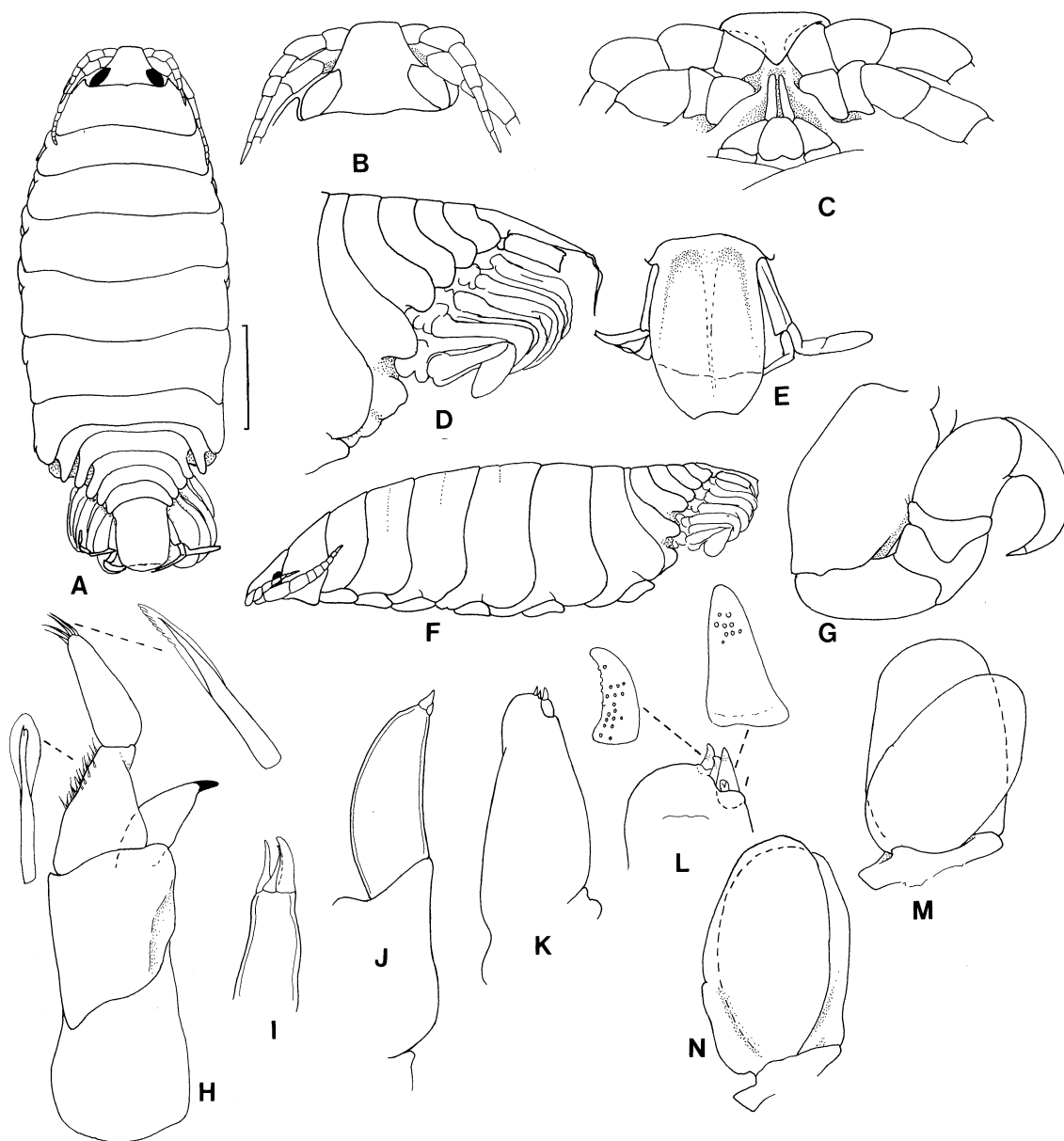


Fig. 3. *Pleopodias elongatus*, holotype (USNM 40917). A, dorsal view; B, cephalon, dorsal view; C, frons; D, pleon, lateral view; E, pleotelson (straightened); F, lateral view; G, pereopod 1, in situ; H, mandible; I, maxillule apex; J, maxilliped articles 2, 3; K, maxilla; L, maxilla, apex and detail of spines; M, pleopod 1; N, pleopod 2. Scale line represents 4.0 mm.

female except maxilliped article 3 with larger terminal spines, pereopod with dactylus nodules not fully developed. Pleopod 2 with appendix masculina, folding on endopods of pleopods 3–5 less well developed. Penial process not present (in species examined here).

Type species. Leach (1818), in establishing the genus, recorded three species. Kussakin (1979) designated *Anilocra cuvieri*, the first described in Leach's text, as the type species. *Anilocra cuvieri* is a synonym of *Anilocra physodes* (Linnaeus, 1758) (see Trilles, 1975, for synonymy), and the type specimen of *A. physodes* is held at the British Museum (Natural History) (1758: 636).

Remarks. The genus *Anilocra*, currently with about 37 species, is primarily tropical in distribution. Only three eastern Atlantic species extend beyond the tropics (Trilles, 1975). *Anilocra frontalis* occurs off the Dutch coast at latitude 53°33' N (Holthuis, 1978). In Australia, the most southerly records of *Anilocra* are of *A. leptosoma* and *A. apogonae*, both of which occur in Moreton Bay, southern Queensland (ca. 27°S). The distribution of Australian *Pleopodias* and *Anilocra* is given in Figure 33.

There are two areas of high diversity, the West Indies with nine species, and the Australian-Malaysian region with 18 species. The eastern Atlantic has three species, while the Indian and Pacific Oceans (excluding Australia) have 14 species, seven of which are from the Malaysian-Indonesian area.

Characters which separate *Anilocra* from related genera are to be found in the key. *Anilocra* is distinguished from *Pleopodias* by the obviously wider pleon and pleotelson, shorter antennule articles, shorter mandible palp article 3, and the character differences listed under the remarks for *Pleopodias*.

Types of four Indo-Pacific species were either not located (*A. australis* Schiödt & Meinert, 1881, and *A. alloceraea* Koelbel, 1878), or not made available for study (*A. acuminata* Haller, 1880, and *A. tropica* Avdeev, 1977). The status of these species, with the exception of *A. alloceraea*, is uncertain, and they cannot be separated from others of the genus with any confidence. *Anilocra australis* is characterised by a very short uropod endopod. *Anilocra tropica* is apparently characterised by a very wide pleon, short subequal uropod rami, and pereopod 7 with very large spines which occur on the merus, propodus, and uniquely, on the dactylus (Avdeev, 1977, fig 2). Little can be said of *Anilocra acuminata*, but that it could be one of many Indo-Pacific species.

Characters of Taxonomic Utility

Cephalon: rostrum: width, length; eye size. Pereon: relative width. Pleon: relative length of pleonite 1; relative width; details of posterolateral angles of pleonites 4 and 5; detail of lateral margins of pleonites 1–4. Pleotelson: shape; lateral margins flat or upturned.

Antennule and antenna: relative lengths of both,

number of articles present in antenna; antennule article 3 produced or not. Mouthparts: mandible palp; details of maxilla and maxilliped may often be supportive characters. Pereopods: shape of, and presence and distribution of nodules on dactylus of pereopods 1–4; density of spines on pereopod 7; relative length of pereopod 7 compared to pereopod 1. Pleopods: shape and width; degree of folding on pleopods 3–5; presence or absence of appendix masculina. Uropods: shape; relative lengths of rami; extension beyond pleotelson or not.

Host Preferences

Recent work by Williams & Williams (1981) demonstrated that *Anilocra* species have a higher degree of host specificity than previously suspected. Prior to their revision of the Caribbean *Anilocra*, most specimens were attributed to *Anilocra laticauda* which had been recorded from hosts of 11 fish families (Trilles & Vala, 1975). Williams & Williams (1981) found *A. laticauda* to be a *nomen dubium*, and recorded nine species of *Anilocra* from the West Indies. Of these, five were recorded from a single host species, three were from two to four species within a genus, and one from nine host species from three genera of Serranidae. This suggests a strong correlation between isopod and host family, but varying degrees of specificity at low levels of host classification.

Half of the Australian species recorded here lack host data. The remainder suggest a pattern similar to that of West Indian *Anilocra*: close affinity to a host family, lower specificity to genus and species. *Anilocra apogonae* is recorded from five host species in two genera of Apogonidae. *Anilocra nemipteri* from seven species in three genera of Nemipteridae, and also one species of Pomacentridae. *Anilocra pomacentri* is recorded from ten species in three genera of Pomacentridae.

Host preference on the Great Barrier Reef appears to be strongly localised. At Lizard Island, *Anilocra pomacentri* utilises *Pomacentrus melanochir* and *P. pavo*, while on Heron Island and adjacent Wistari Reef it has been recorded only from *Chromis nitidus*. In the Palm Group, these three hosts are present, but *A. pomacentri* occurs commonly on *Pomacentrus melanopterus*, *Pomacentrus lepidogenys* and *Pomacentrus moluccensis*. *Anilocra nemipteri* occurs commonly on *Scolopsis bilineatus* at Lizard Island. It is not found on that host in the Palm Group but on *Scolopsis monogramma* and *Pentapodus setosus*. Table 1 summarises host data for Australian species of *Anilocra*.

In areas of high host species diversity (West Indies, central Indo-Pacific) *Anilocra* species are found on a limited number of host species, usually within one or two genera. In areas of lower diversity, the isopod can utilise a greater number of hosts, perhaps through reduced competitive pressure. An example is the north-eastern Atlantic and Mediterranean species *Anilocra physodes* which has been recorded from 25 genera in

13 families (Trilles, 1975a). *Anilocra monoma* from Kuwait was recorded from 4 host species in 4 families (Bowman & Tareen, 1983), a pattern inconsistent with

that of other tropical *Anilocra*. *Anilocra monoma* has no recorded sympatric congeners, and again, this may allow it to utilise a wider array of hosts.

Table 1. Australian species of *Anilocra* with their recorded hosts (* = unconfirmed record; † = isopod sight record; GBR = Great Barrier Reef).

ISOPOD		HOST	DISTRIBUTION
<i>A. apogonae</i>	Apogonidae	<i>Apogon cooki</i>	northern and eastern Australia
		<i>Apogon</i> species	Palm Group, GBR
		<i>Apogon fasciata</i>	Moreton Bay
		<i>Apogon cyanosoma</i> †	Palm Group, GBR
		<i>Cheilodipterus quinquelineatus</i>	northern GBR
<i>A. dimidiata</i>	Nemipteridae	<i>Nemipterus</i> * sp.	Gulf of Carpentaria
	Leiognathidae	<i>Leiognathus bindus</i>	eastern Queensland
<i>A. leptosoma</i>	Clupeidae	<i>Nematalosa come</i>	eastern Queensland
		<i>Nematalosa erebi</i>	southern Queensland
<i>A. longicauda</i>	Priacanthidae	<i>Priacanthus</i> sp.	GBR
	Haemulidae	<i>Plectorhynchus goldmani</i>	Swains Reefs, GBR
		<i>Diagramma picta</i>	North West Shelf; Lizard Island†, GBR
<i>A. nemipteri</i>	Nemipteridae	<i>Nemipterus virgatus</i>	North West Shelf
		<i>Nemipterus tolu</i> *	Gulf of Carpentaria
		<i>Scolopsis bilineatus</i>	GBR
		<i>Scolopsis margaritifer</i>	Lizard Island, GBR
		<i>Scolopsis monogramma</i>	Palm Group, GBR
		<i>Pentapodus setosus</i>	Palm Group, GBR
		<i>Pomacentrus jerdoni</i>	North West Shelf
<i>A. pomacentri</i>	Pomacentridae	<i>Pomacentrus amboinensis</i>	Waining Reef, GBR
	Pomacentridae	<i>Pomacentrus lepidogenys</i>	Palm Group, GBR
		<i>Pomacentrus melanochir</i>	Lizard Is., GBR
		<i>Pomacentrus melanopterus</i>	Palm Group, GBR
		<i>Pomacentrus moluccensis</i>	Palm Group, GBR
		<i>Pomacentrus pavo</i> †	Lizard Is., GBR
		<i>Chromis atripes</i>	Carter Reef, GBR
		<i>Chromis margaritifer</i>	Myrmidon Reef, GBR
		<i>Chromis nitidus</i>	Capricorn Group, GBR
		<i>Neopomacentrus violascens</i> †	Palm Group, GBR

Key to Australian Species of *Anilocra*

1. Pereopods 2–4, or 1–4 with nodules on dactylus. 2
 —Pereopods 1–4 without nodules on dactylus. 9
2. Antennule article 3 anterodistal margin produced. 3
 —Antennule article 3 anterodistal margin not produced. 8
3. Pleonite 1 concealed by pereonite 7; uropod apices acute. *A. koolanae*
 —Pleonite 1 not concealed by pereonite 7; uropod apices rounded. 4
4. Pleotelson lateral margins flat or weakly turned up; pereopods 1–4 with 3 dactylus nodules. 5
 —Pleotelson lateral margins upturned; pereopods 1–4 with only anterior dactylus nodule conspicuous. 7
5. Body about 4.0–4.5 times as long as wide; antennule article 3 strongly produced, 2.0 times as wide as long. *A. alloceraea*
 —Body less than 4.0 times as long as wide; antennule article 3 weakly produced, 1.2–1.4 times as wide as long. 6
6. Pleotelson ovate, lateral margins converging smoothly to caudomedial point; pleonite 1 lateral margin posteriorly produced. *A. leptosoma*

- Pleotelson lateral margins weakly convex, posterior margin biconcave, distinct from lateral margin; pleonite 1 lateral margin not posteriorly produced. *A. caudata*
- 7. Antenna extending to posterior of pereonite 2; pleonite 5 dorsal posterolateral angle strongly produced, acute. *A. dimidiata*
- Antenna not extending to posterior of pereonite 2; pleonite 5 dorsal posterolateral angle weakly produced. *A. nemipteri*
- 8. Pereopod 1 dactylus without nodules; pleonites 4 and 5 dorsal posterolateral angles produced, acute; pleotelson posterior margin distinct from lateral margin. *A. apogonae*
- Pereopod 1 dactylus with nodules; pleonite 5 only with dorsal posterolateral angle produced; pleotelson margins smooth rounded. *A. soelae*
- 9. Antennule article 3 anterodistal margin produced. 10
- Antennule article 3 anterodistal margin not produced. 11
- 10. Pleotelson ovate, widest medially; uropods not extending beyond posterior of pleotelson; pereopods 1–4 with short robust dactylus (Fig. 25A). *A. longicauda*
- Pleotelson widest anteriorly; uropods extending beyond posterior of pleotelson; pereopods 1–4 with long dactylus (Fig. 26K). *A. ankistra*
- 11. Antenna extending to pereonite 3; body sub-parallel in shape; rostrum weakly developed. *A. morsicata*
- Antenna extending to anterior of pereonite 2; body ovate in shape; rostrum distinct. *A. pomacentri*

Anilocra alloceraea Koelbel

Figs 4, 5

Anilocra alloceraea Koelbel, 1878: 407, pl. 2, figs 1a–e.—Miers, 1880: 463.

Material examined. 11 females (ovig 20.0, 19.0, 18.0, 17.5, 17.0, non-ovig 17.5, 16.0, 15.5, 13.0), Batavia (= Jakarta), Indonesia, Dec 1928, op *Stolephorus indicus* (RMNH 1330). 3 females (ovig 21.0, 17.5, 17.0, non-ovig 18.0), Balikpapan Harbour, East Kalimantan, Indonesia, 26 Aug 1976, from mangrove fishes (AM P36750). Female (ovig 22.0), off Orontes Reef, Arafura Sea, NT, 11°50.0'S, 132°04.3'E, 4 Aug 1986, trawled 20–24 m (NTM 4111).

TYPES. Some of Koelbel's (1878) other material is held at the Naturhistorisches Museum, Vienna, but of the specimens I have examined I have been unable to identify any types of *A. alloceraea*.

Type locality. Sumatra Sea (Koelbel, 1878).

Description of female. Body about 4.5 times as long as wide; dorsal surface smoothly domed. Pleonite 1 longest, posterolateral margins weakly produced; pleonites 2–4 subequal in length, posterolateral margins rounded; pleonite 5 with dorsal posterolateral margin acute, weakly produced. Pleotelson with lateral margins straight, upturned; posterior margin bisinuate, with broad caudomedial lobe, provided with short marginal setae.

Antennule not extending beyond posterior of eye, with 8 articles; article 3 with anterior margin strongly produced. Antenna extending to posterior of pereonite 1, with 10 articles, articles 2 and 3 obviously (about 0.6) narrower than article 1.

Mandible palp article 3 with about 11 setae on distal margin; article 2 medial margin weakly lobate. Maxillule with 4 terminal spines. Maxilla with 2 spines each on medial and lateral lobes respectively. Maxilliped article 3 with 3 terminal spines.

Pereopod 1 with large nodule on dactylus anterior margin, posterior margin with single nodule; pereopods 2–4 with prominent nodule on anterior margin, and 2 nodules on posterior margin of dactylus; nodules increasing in size from pereopods 2 to 4.

Pleopod rami slender, elongate (pleopod 1 exopod 2.5 times as long as wide; pleopod 2, 2.3; pleopods 3 and 4, 2.5); endopod of all pleopods shorter than exopod. Pleopods 3–5 with endopod proximomedial lobe prominent; pleopods 3 and 4 endopods each with small lobes; endopod of pleopod 5 massively folded. Uropod rami subequal in length, extending beyond posterior of pleotelson; distomedial margin of both rami with setae; exopod medial margin convex, lateral margin straight, apex narrowly rounded; endopod apex broadly rounded.

Male. Not known.

Colour. Pale creamy yellow, brown chromatophores over dorsal surfaces.

Size. Females 13.0–23.5 mm; Koelbel (1878) recorded his specimen at 29 mm.

Remarks. Miers (1880) first questioned the validity of *Anilocra alloceraea* suggesting that it could be a synonym of *A. leptosoma*, and later workers (Monod,

1934; Trilles, 1975) accepted this synonymy. There are numerous differences between the two species, several of which are clearly illustrated in Koelbel's (1878) figures. These are: the body 4.5 times longer than wide (*A. leptosoma*, 3.5); pleonite 1 long (short); lateral margins of pleotelson turned up (flat); posterior margin of pleotelson bisinuate with broad caudomedial lobe (smoothly curving to small caudomedial lobe);

antennule article 3 strongly produced (moderately produced); pereopod 1 anterior nodule prominent (pereopod 1 nodule weak).

Anilocra caudata differs from *A. alloceraea* by having the pleotelson posterior margin acutely angled, pleotelson lateral margins weakly turned up, pleonite 1 short, antennule article 3 weakly produced, and a more ovoid body shape.

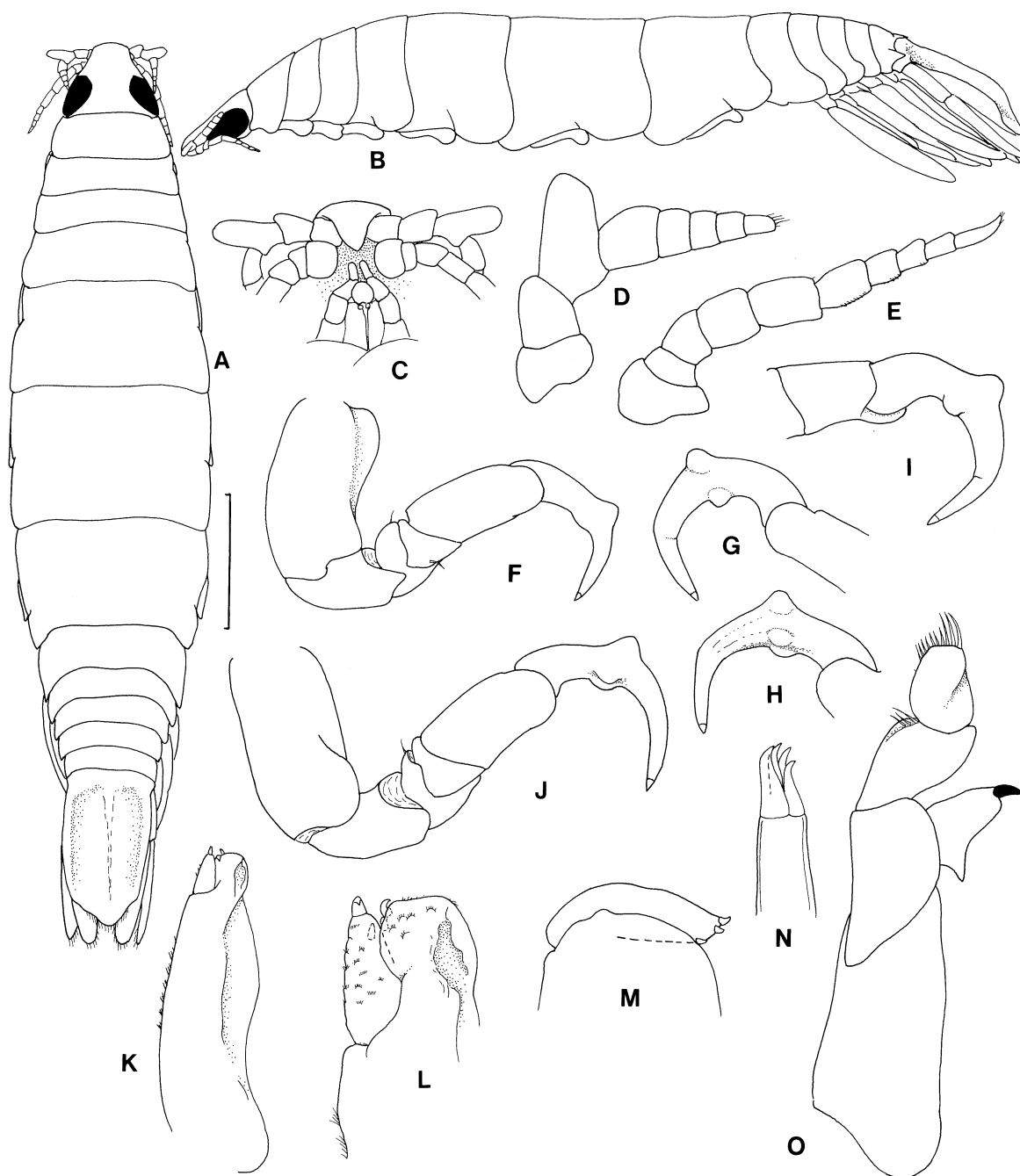


Fig. 4. *Anilocra alloceraea*, A–C, female 20.0 mm, remainder female 19.0 mm (RMNH 1330). A, dorsal view; B, lateral view; C, frons; D, antennule; E, antenna; F, pereopod 1; G, pereopod 4, dactylus, lateral view; H, pereopod 4, dactylus, posterior perspective; I, pereopod 4, dactylus, medial view; J, pereopod 2; K, maxilla; L, maxilla apex; M, maxilliped article 3; N, maxillule apex; O, mandible. Scale line represents 3.0 mm.

Hosts. Indonesian material recorded from *Stolephorus indicus* (F. Engraulidae).

Distribution. Jakarta, Indonesia; in Australia from Orontes Reef, Cobourg Peninsula, Northern Territory.

Anilocra cavicauda Richardson

Fig. 6

Anilocra cavicauda Richardson, 1910: 18, fig. 17.—Nierstrasz, 1931: 129. Not *Anilocra cavicauda*.—Hale, 1926: 210, fig. 7 (= *Anilocra nemipteri*).

Material examined. HOLOTYPE: Female (ovig 31.0), Pandanon Island, Philippines, 23 March 1909, coll. U.S. Bureau of Fisheries *Albatross* Philippine Expedition, 1907–1908 (USNM 40936).

Descriptive notes. Body about 3.4 times as long as wide. Pleonite 1 posterolateral margins not produced, pleonites 2–4 with posterolateral margins rounded; pleonite 5 with dorsal posterolateral margins acute.

Pleotelson lateral margins weakly turned up, posterior margin tapering to narrowly rounded caudomedial point.

Antennule article 3 produced. Antenna extending to posterior of pereonite 1. Pereopods 1–4 with weakly developed nodule on dactylus anterior margin. Uropods extending to posterior of pleotelson, apices acute; exopod distinctly shorter than endopod.

Remarks. Monod (1934) included *A. cavicauda* in his synonymy for *A. longicauda*, this being later followed by Trilles (1975) although neither author gave their reasons. The figures given here for both species show that they cannot be considered conspecific, differing in numerous aspects of their morphology. *Anilocra cavicauda* has pereopod dactyli 1–4 with a nodule on the anterior margin, while in *A. longicauda* the pereopod dactyli lack nodules and are far shorter. Antennule article 3 of *A. cavicauda* is produced, and is not produced in *A. longicauda*. Lastly the figures given here illustrate the very different pleotelson shape of the two species.

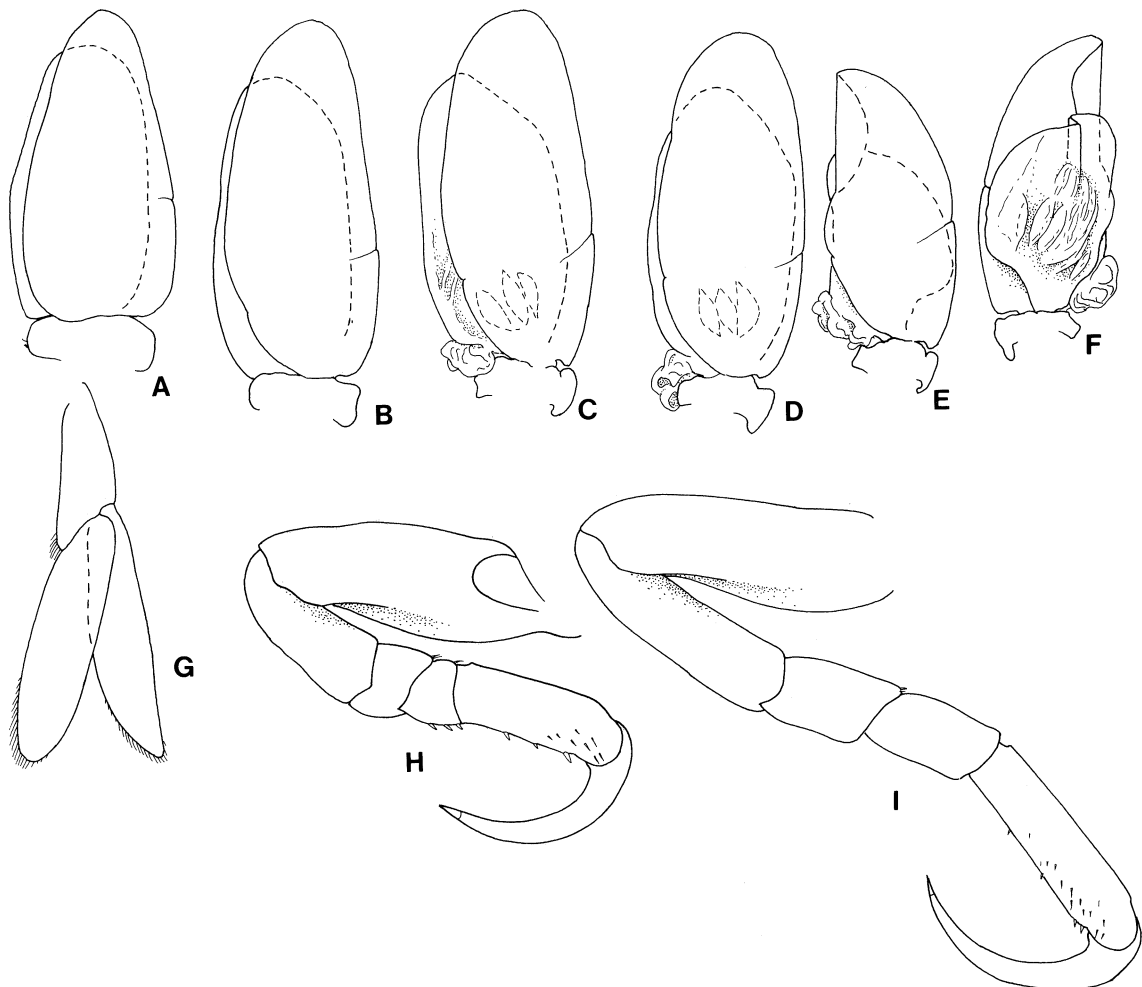


Fig. 5. *Anilocra alloceraea*, female, 19.0 mm (RMNH 1330). A–E, pleopods 1 to 5 respectively; F, pleopod 5, posterior view; G, uropod; H, pereopod 6; I, pereopod 7.

Hale (1926) recorded this species from Australia, but his record is a misidentification, the specimens being *A. nemipteri*.

Hosts. Not known.

Distribution. Philippines (Richardson, 1910).

Anilocra caudata Bovallius

Figs 7, 8

Anilocra leptosoma Bleeker, var. *caudata* Bovallius, 1887: 13, pl. III figs 29–38.

Anilocra leptosoma.—Monod, 1934: 11, pls 19, 22A, B, 23,

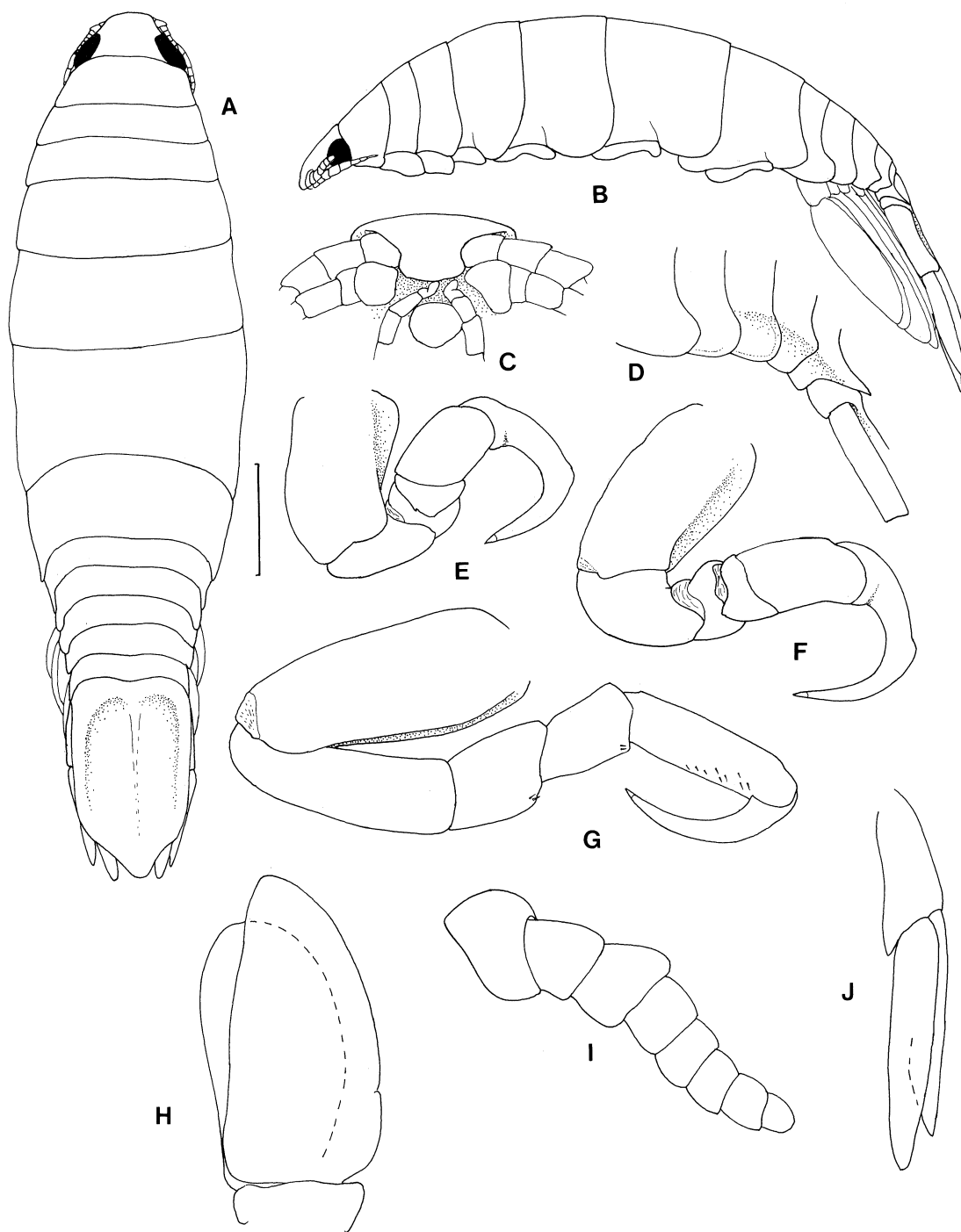


Fig. 6. *Anilocra cavicauda*, holotype (USNM 40936). **A**, dorsal view; **B**, lateral view; **C**, frons; **D**, pleon, lateral view; **E**, pereopod 1; **F**, pereopod 2; **G**, pereopod 7; **H**, pleopod 1; **I**, antennule; **J**, uropod. Scale line represents 4.0 mm.

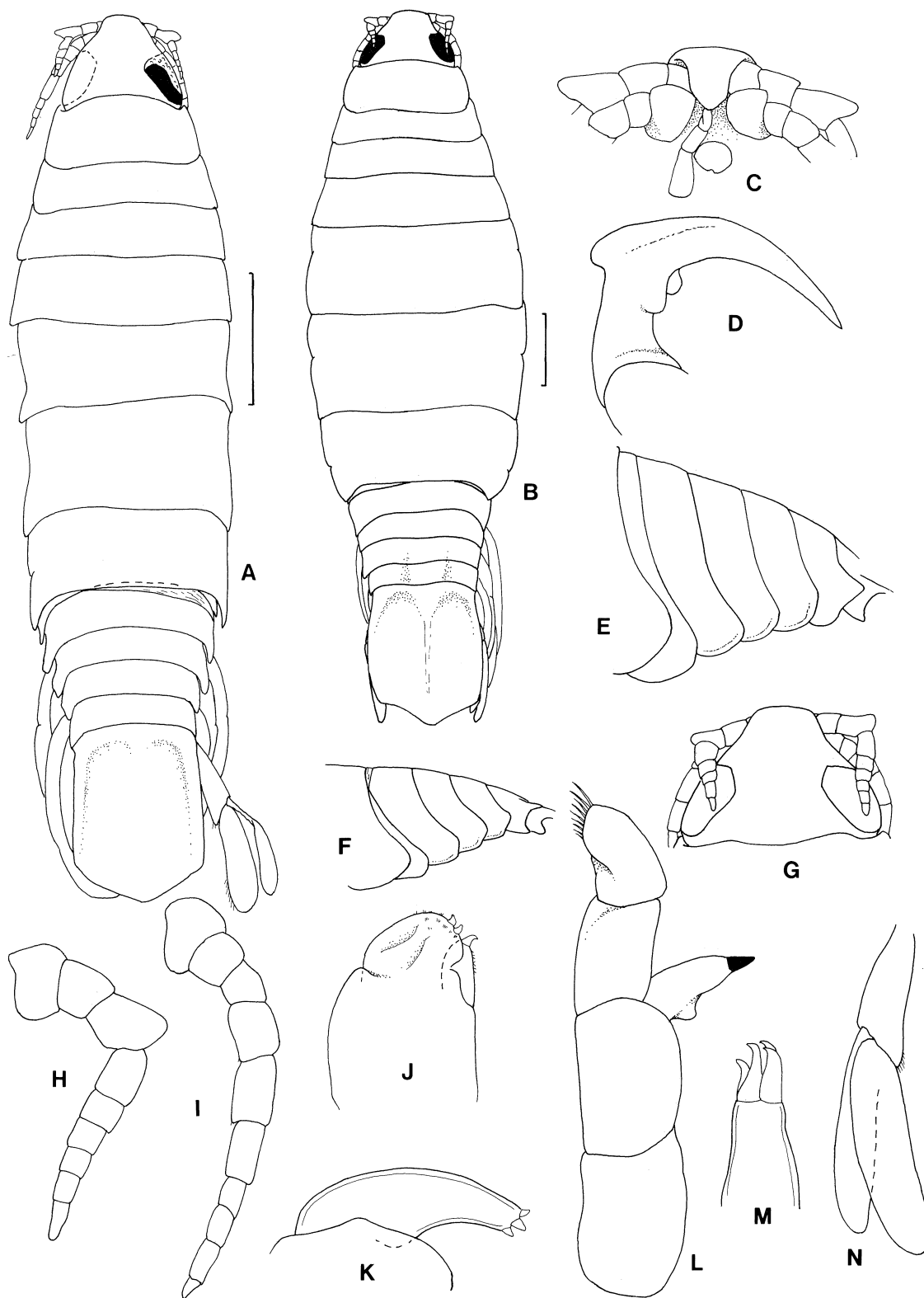


Fig. 7. *Anilocra caudata*, A, C, D, F, holotype (NRS 5774), remainder female (30.0 mm) NTM Cr 4240. **A**, dorsal view; **B**, dorsal view; **C**, frons; **D**, pereopod 2 dactylus, in situ; **E**, pleon, lateral view; **F**, pleon, lateral view; **G**, cephalon; **H**, antennule; **I**, antenna; **J**, maxilla apex; **K**, maxilliped article 3; **L**, mandible; **M**, maxillule apex; **N**, uropod. Scale lines represent 3.0 mm.

24B; Trilles, 1975: 310, pl. 1, fig. 6 (not *A. leptosoma* Bleeker).

Material examined. HOLOTYPE: female (ovig 21.0), Philippinerna, Wessel (NRS Is. 5774). Bovallius (1887) mentioned only the one specimen, held at the Rijksmuseum, Stockholm. The specimen is in very poor condition, and dissected appendages are missing.

Non-type: female (non-ovig 23.5), Snake Bay, Melville Island, NT, 11°25'S 130°41'E, Sept 1975, depth 60 m (NTM Cr2291). Female (ovig 30.0), North of Cape Wessel, NT, Arafura Sea, 10°24'S 133°36'E, 3 Feb 1985, depth 61 m, prawn trawl, coll. R. Williams (NTM Cr4240). Female (non-ovig 24.0), north of Wessel Islands, NT, 10°25'S 136°35'E, 1 Jan 1985, depth 64 m, coll. Rex Williams (NTM Cr4241). Female (ovig 31.0), south of Cooktown, Qld, 16°1'S 145°29'E, 6 Feb 1979, trawled, 20 m, coll. AM, AIMS (AM P36284).

Type locality. Philippines (Bovallius, 1887).

Description of Australian female. Body about 3.5 times as long as wide. Rostrum broad; eyes about 0.4 width of cephalon. Pleonite 1 short, largely concealed by pereonite 7, ventrolateral margins not posteriorly produced. Pleonites 2–4 with rounded lateral margins. Pleonite 5 dorsal posterolateral margins not produced. Pleotelson lateral margins straight, weakly turned up; posterior margin abruptly angled, forming distinct caudomedial point.

Antennule extending to posterior of cephalon; anterodistal margin of article 3 produced. Antenna with

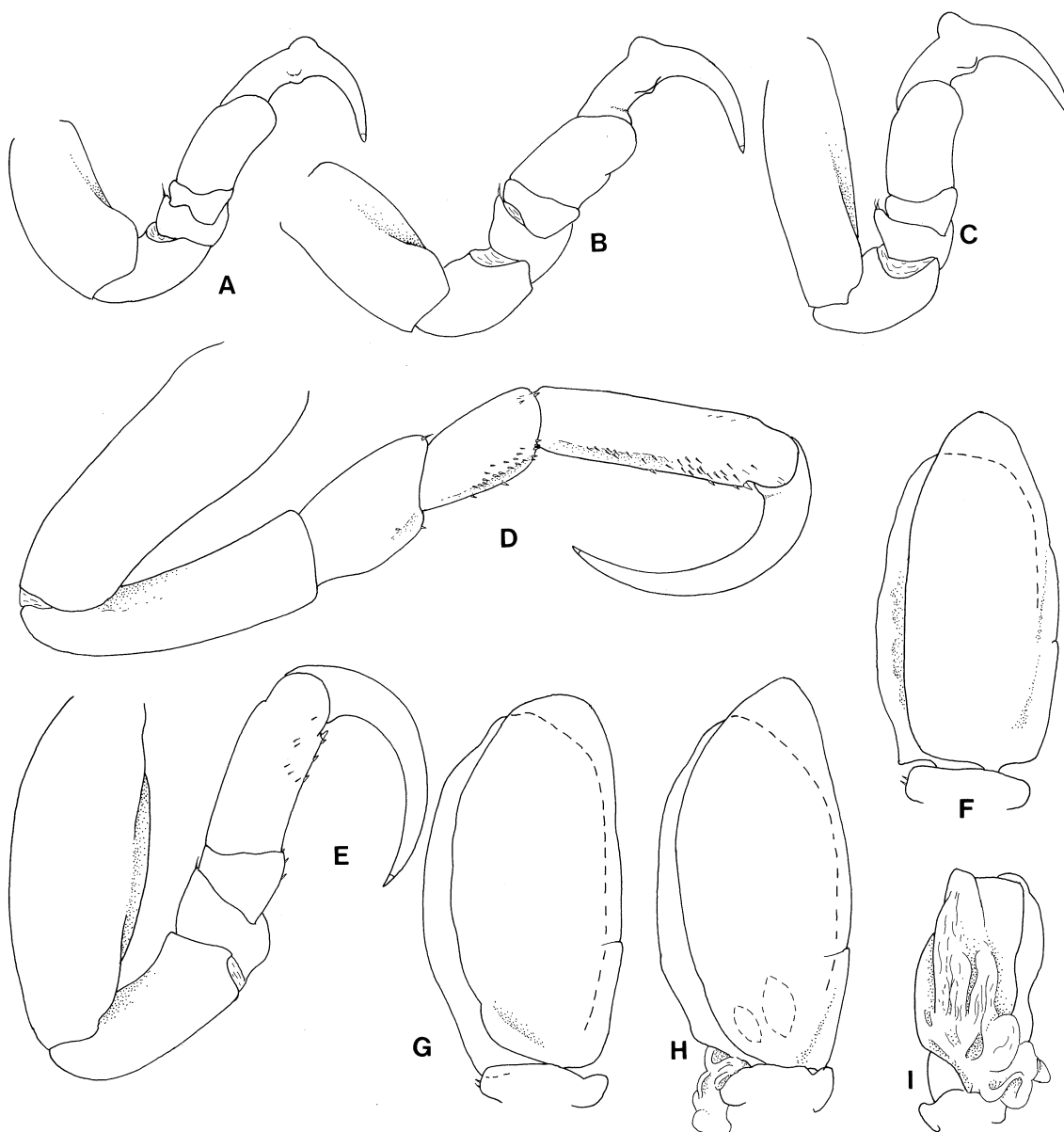


Fig. 8. *Anilocra caudata*, female (30.0 mm), NTM Cr 4240. **A**, pereopod 1; **B**, pereopod 2; **C**, pereopod 4; **D**, pereopod 7; **E**, pereopod 6; **F–I**, pleopods 1 to 3 and 5 respectively.

10 articles, extending to posterior of pereonite 1.

Mandible palp with about 10 setae on distolateral margin. Maxillule with 4 terminal spines. Maxilliped article 3 with 3 terminal spines.

Pereopod 1 with prominent nodule on dactylus anterior margin and 2 nodules on posterior margin; dactylus nodules increasing in prominence from pereopods 2–4. Pereopod 6 with 3 spines on propodal palm, about 6 spines on posteromedial surface. Pereopod 7 with abundant small spines on posterolateral margins of carpus and propodus.

Pleopods 1 and 2 elongate. Pleopod 3 endopod with prominent folded proximomedial lobe; endopod with 3 small folds; pleopod 4 with 3 small folds; pleopod 5 greatly folded. Uropod extending slightly beyond posterior of pleotelson, rami subequal in length, or exopod slightly shorter; apices broadly rounded.

Colour. Pale tan in alcohol.

Size. Females 21.0–30.0 mm.

Variation. The specimen from Melville Island has a more elongate body, about 4.5 times as long as wide, but otherwise agrees well with the other specimens.

Remarks. This species is most similar to *Anilocra leptosoma* and *A. monoma*. There are several differences between *A. leptosoma* and the material examined here, and Bovallius' (1887) subspecies is here given specific rank. The differences are in *A. caudata*: pleonite 1 posterolateral margins not produced (produced in *A. leptosoma*); pleotelson lateral margins straight, weakly upturned (convex and flat); pleotelson posterior margins abruptly angled to caudomedial point (converging smoothly to point).

Anilocra monoma has the pereopod nodules very weakly developed, and a pleotelson the same as that of *A. leptosoma*. *Anilocra cavicauda* differs from *A. caudata* in having more slender pleotelson and uropods, weakly developed pereopod nodules, and acute uropod apices.

Host. Not known.

Distribution. Vietnam (Monod, 1934), Philippines (Bovallius, 1887), Melville and Wessel Islands, Northern Territory, and off Cooktown, Queensland.

Anilocra dimidiata Bleeker

Figs 9, 10, 11

Anilocra dimidiata Bleeker, 1857: 21, 23, pl. 2, fig. 10.—Schiodte & Meinert, 1881: 111, pl. 8 figs 5, 6; Nierstrasz, 1915: 81; Monod, 1934: 10, pls 17C-D, 24A, 25D-F; Richardson, 1910: 18 (part).

Unconfirmed records or citations: Miers, 1880: 462; Gerstaecker, 1882: 261; Stebbing, 1900: 639; 1905: 26; Nierstrasz, 1918: 114; 1931: 128; Serène, 1937: 69; Pillai, 1954: 14; Trilles, 1975: 305, pl. 1 fig. 2; 1979: 249.

Anilocra carpentariensis Avdeev, 1977: 143, fig. 3.

Anilocra dimidiata.—Bowman & Tareen, 1983: 5 (lapsus).

Material examined. SYNTYPES: 2 females (ovig 23.0, 25.0), Batavia (= Jakarta), Indonesia, coll. Bleeker (RMNH 22). Held at the Rijksmuseum van Natuurlijke Historie, Leiden.

Non-type: female (non-ovig 25.0), Baai van Batavia, 1910 (RMNH 21); female (ovig 26.0), Java Zee, April 1907, ex *Psettus evansi** (F. Monodactylidae, name unconfirmed) (RMNH 19); 5 females (ovig 20.0, 22.0, 24.0, non-ovig 23.0, 24.0), Batavia, Sept 1910, (RMNH 23); all from Indonesia, collected by P. J. Buitendijk, and reported on by Nierstrasz, 1915. 3 females (ovig 27.0, 21.0, non-ovig 22.0), Batavia, no other data (RMNH 1332). Numerous specimens, mostly juvenile (USNM 40968, 40969, 40971–73), Philippines, examined by Richardson (1910).

Australian material: female (non-ovig 10.5), Rargala Is., Wessel Islands, NT, 6 April 1982, commercial prawn trawl, coll. H.K. Larson (NTM Cr4242). 13 females [ovig 22.5 (AM P36277), 22.5, 22.0, 21.5 (AM P36279), 20.5, 20.5, 20.0, 20.0, 19.5, 19.5 (AM P36278), 18.5, non-ovig 21.5 (AM P36276), 18.0], Gulf of Carpentaria, 1969, from various trawled fishes (*Nemipterus**), coll. CSIRO Gulf of Carpentaria Prawn Survey (AM P36275–P36279). Female (ovig 20.0), Cleveland Bay, Townsville, Qld, 3 Oct 1974, coll. D. M. Holdich (QM W10431). 2 females (non ovig 16.0, 17.5), Cleveland Bay, Townsville, Qld, 6 Sept 1983, ex *Equulites bindus*, coll. B. Ingram (QM W12176).

Type locality. Djakarta Bay (= Jakarta), Java, Indonesia (Bleeker, 1857).

Description of Australian female. Body 3.2–3.9 times as long as wide, coxae scarcely visible in dorsal view. Eyes large, about 0.46 width of cephalon; ocular surface shallowly domed. Pleon about 0.5 width of pereon; pleonite 1 longest, posterolateral margins not produced; posterolateral margins of pleonites 2–5 not produced; dorsal posterolateral angle of pleonite 5 strongly produced, acute, curving medially. Pleotelson lateral margins turned up; posterior margin bisinuate, with caudomedial lobe; lateral and posterior margin forming distinct angle.

Antennule with 6 or 7 articles, extending to posterior of eye; article 3 with anterodistal angle weakly produced. Antenna with 10 articles, extending to posterior of, or just beyond pereonite 2; articles 1–3 short, 5–10 elongate; posterior margins of articles 5–7 with blade-like edge.

Mandible palp with 4 setae on distolateral margin of article 2, with 17 setae on distal margin of article 3. Maxillule with 4 terminal spines. Maxilla with 2 spines each on medial and lateral lobe respectively.

Pereopods 1–4 with nodule on dactylus anterior margin progressively increasing in prominence, nodule on dactylus posterior margin very weak.

Pleopods prominent in dorsal view; pleopods 1 and 2 with suture on exopod lateral margin, and on both margins of exopods of pleopods 3–5. Pleopods 3–5 endopods with prominent proximomedial lobe. Pleopod 3 endopod without folded lobes, pleopod 4 with single small lobe, pleopod 5 endopod with 3 large folds. Uropod rami extending beyond posterior of pleotelson, both rami curving medially; exopod narrower and slightly shorter than endopod, peduncle mediodistal angle produced and acute.

Male. None examined.

Colour. Dense brown chromatophores on side that is uppermost when on host.

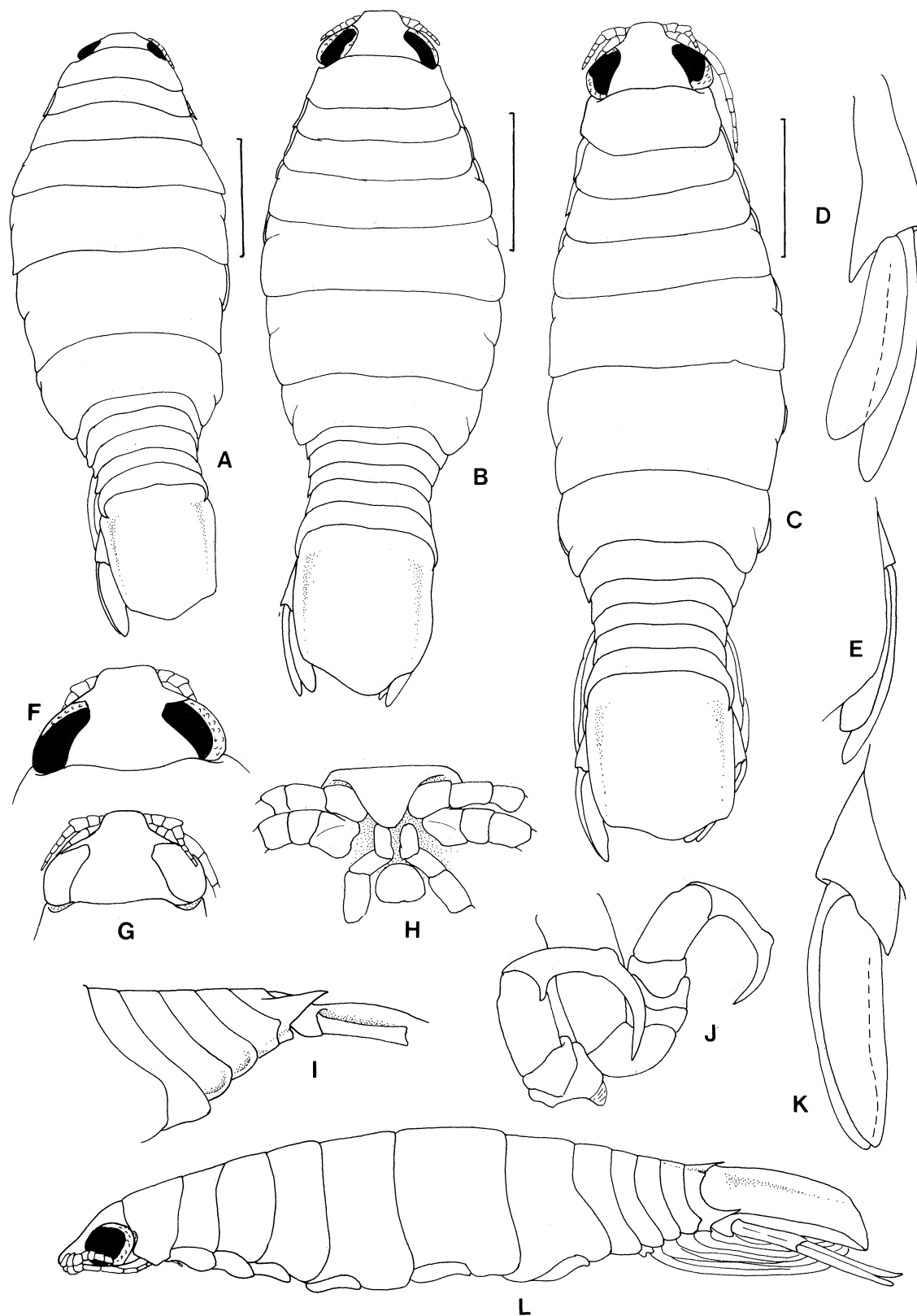


Fig. 9. *Anilocra dimidiata*, A, H–J, syntype, 25.0 mm; F, syntype 23.0 mm; remainder as indicated. **A**, dorsal view; **B**, female, AM P36276; **C**, female, AM P36277; **D**, uropod, female, AM P36279; **E**, uropod, female 27.0 mm, RMNH 1332; **F**, cephalon; **G**, cephalon, female, AM P36277; **H**, frons; **I**, pleon, lateral view; **J**, pereopods 1, 2, in situ; **K**, uropod, female 20.0 mm, RMNH 23; **L**, lateral view, female, AM P36277. Scale lines represent 4.0 mm.

Size. Ovigerous females 18.5–27.0 mm, non-ovigerous females 16.0–23.0 mm.

Variation. Indonesian specimens are generally wider than Australian specimens, but width ranges of the two populations overlap. In all Australian specimens the uropod exopod is longer and narrower than the endopod, while in Indonesian specimens the uropod rami are most commonly subequal in length.

Remarks. The strongly produced and acute posterolateral margins of pleonite 5, weakly produced antennule article 3, antenna extending to the posterior of pereonite 2, and weakly developed nodules on the posterior margin of the dactylus of pereopods 1–4 all serve to identify this species.

The types of *Anilocra carpentariensis* were not made available for study, but Avdeev's (1977) figures agree

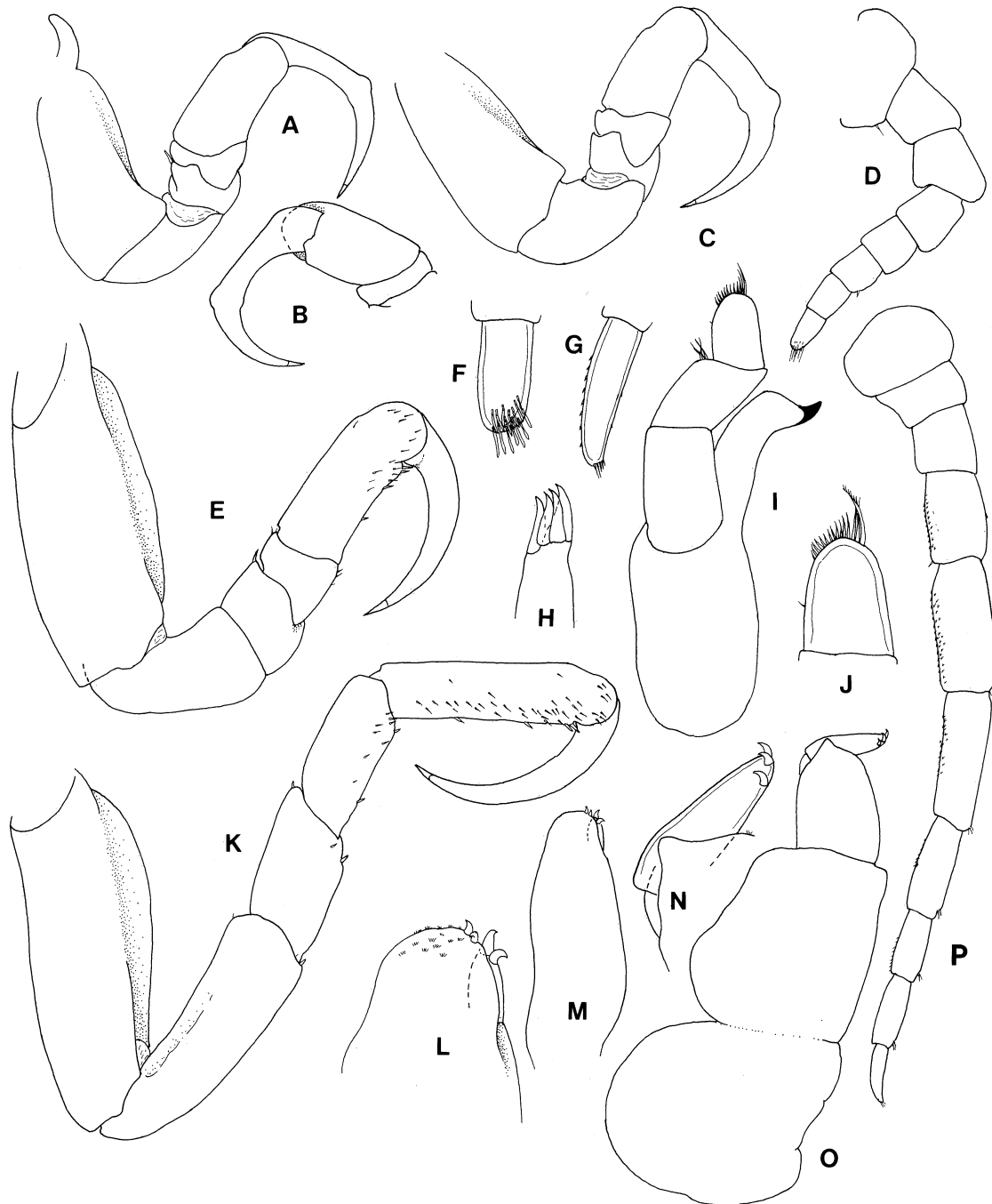


Fig. 10. *Anilocra dimidiata*, A–C, E, H–K, female, AM P36279, remainder female, AM P36276. A, pereopod 1; B, pereopod propodus, medial view; C, pereopod 2; D, antennule; E, pereopod 6; F, antennule apex; G, antenna apex; H, maxillule apex; I, mandible; J, mandible palp, article 3; K, pereopod 7; L, maxilla apex; M, maxilliped; N, maxilliped article 3; O, maxilliped; P, antenna.

with the characters listed above, and the species is here synonymised with *A. dimidiata*.

Hosts. *Psettus evansi** (Monodactylidae) (Nierstrasz, 1915); *Leiognathus bindus*, positioned dorsal to the eye; and unspecified *Nemipterus* spp.

Distribution. Indonesia; Vietnam (Monod, 1934); Philippines (Richardson, 1910). Wessell Islands, Gulf of Carpentaria and Townsville in Australia. The numerous unconfirmed records suggests that this species may have a wider distribution.

Anilocra leptosoma Bleeker

Figs 12, 13

Anilocra leptosoma Bleeker, 1857: 21, 30, pl. 1, fig. 6.—
Schiödte & Meinert, 1881: 108, pl 8 figs 2–4.

Unconfirmed records or citations: Gerstaecker, 1882: 261; Stebbing, 1900: 640; 1905: 26; Nierstrasz, 1915: 87; 1931: 129; Monod, 1933: 196, fig. 62/3; Barnard, 1925: 392; 1936: 165, fig. 7c,d,e; Boone, 1935: 213, pl. 62; Serène 1937: 69; Pillai, 1954: 14; Kensley, 1978: 78, fig. 32C; Trilles, 1979: 248.

Not *A. leptosoma*: Monod, 1934: 11, pls 19, 22A, B, 23, 24B; Trilles, 1975: 310, pl. 1, fig. 6 (= *Anilocra caudata*).

Material examined. LECTOTYPE: female (ovig 27.0), Batavia (= Jakarta), Indonesia, coll. Bleeker (RMNH 30). Bleeker

(1857) stated that he examined four specimens. At present only one specimen appears to be extant, and in some respects does not agree with Bleeker's figure. This specimen, as the only known type specimen for the species is here designated as lectotype.

Non-type: female (ovig 26.0), Philippines, Salmin (RMNH 4955) (examined by Schiödte & Meinert, 1881). From *Nematalosa come*, Qld: female (non-ovig 30.0), Cleveland Bay, Townsville, 19 March 1983, above left operculum (QM W12177); 2 females (ovig 32.0, non-ovig 24.0), Rose Bay, northern Qld, 23 May 1983, above left operculum (QM W12178); female (ovig 27.0), Townsville, 4 Oct 1983 (AM P36280); all coll. B. Ingram. Female (non-ovig 21.0), King Park, Beaver Rocks boat ramp, Mary River, south-east Qld, 10 April 1982, above and posterior to eye, coll. N.L. Bruce & E.J. Fields (QM W11005). Female (non-ovig 20.0), Cape Bowling Green, Northern Qld, 1914, ex *Dorosoma nasus** (name unconfirmed), coll. R. Hamlyn-Harris (QM W9481). Female (non-ovig 19.5), upper Brisbane River, south-east Qld, 7 Oct 1974, ex 'Bony Bream' *Fluvialosa erebi**, coll. R. Harrison (QM W4878).

Type locality. Djakarta, Indonesia (Bleeker, 1857).

Description of Australian female. Body about 3.3 times as long as wide. Dorsum domed, coxae just visible in dorsal view. Rostrum broad; eyes large, about 0.5 width of cephalon. Coxae narrow. Pleonite 1 short, ventrolateral margin produced; pleonites 2–5 subequal

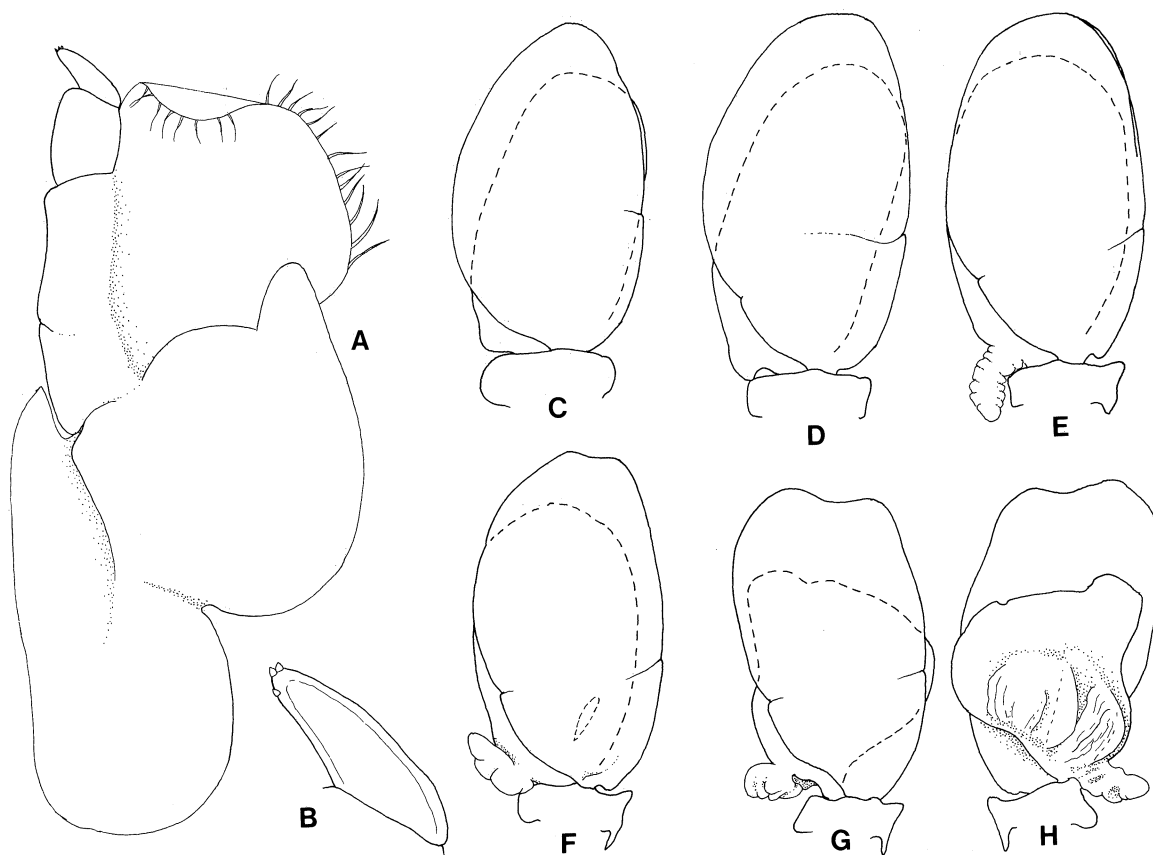


Fig. 11. *Anilocra dimidiata*, female, AM P36279. A, maxilliped; B, maxilliped article 3; C–G, pleopods 1 to 5 respectively; H, pleopod 5, posterior view.

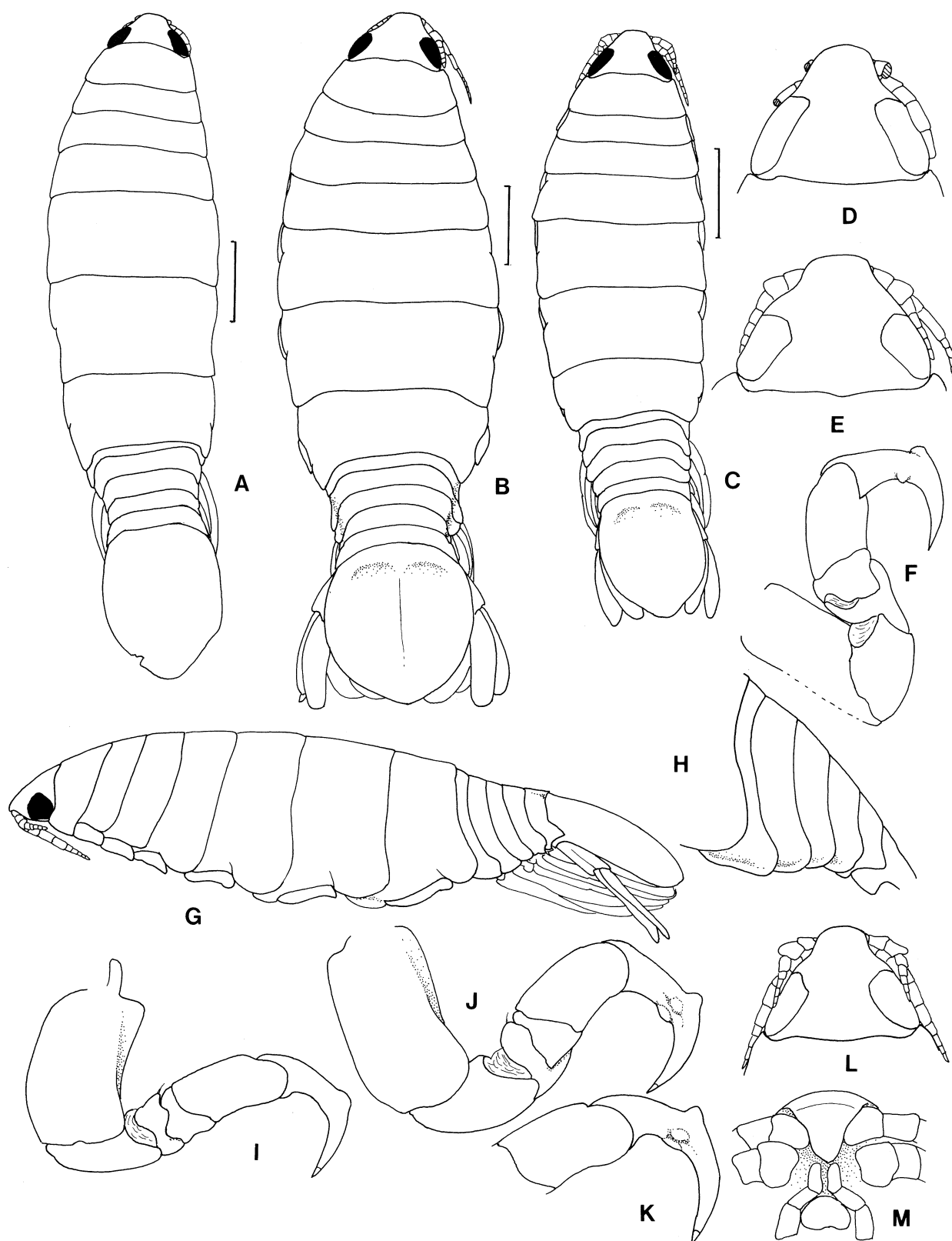


Fig. 12. *Anilocra leptosoma*. A, D, F, H, Lectotype RMNH 30; B, E, H, female 32.0 mm, Rose Bay; C, L, female 24.0 mm, Rose Bay; remainder female 27.0 mm (AM P36280). A, dorsal view; B, dorsal view; C, dorsal view; D, cephalon; E, cephalon; F, pereopod 2, in situ; G, lateral view; H, pleon, lateral view; I, pereopod 7; J, pereopod 2; K, pereopod 4, dactylus; L, cephalon; M, frons. Scale lines represent 4.0 mm.

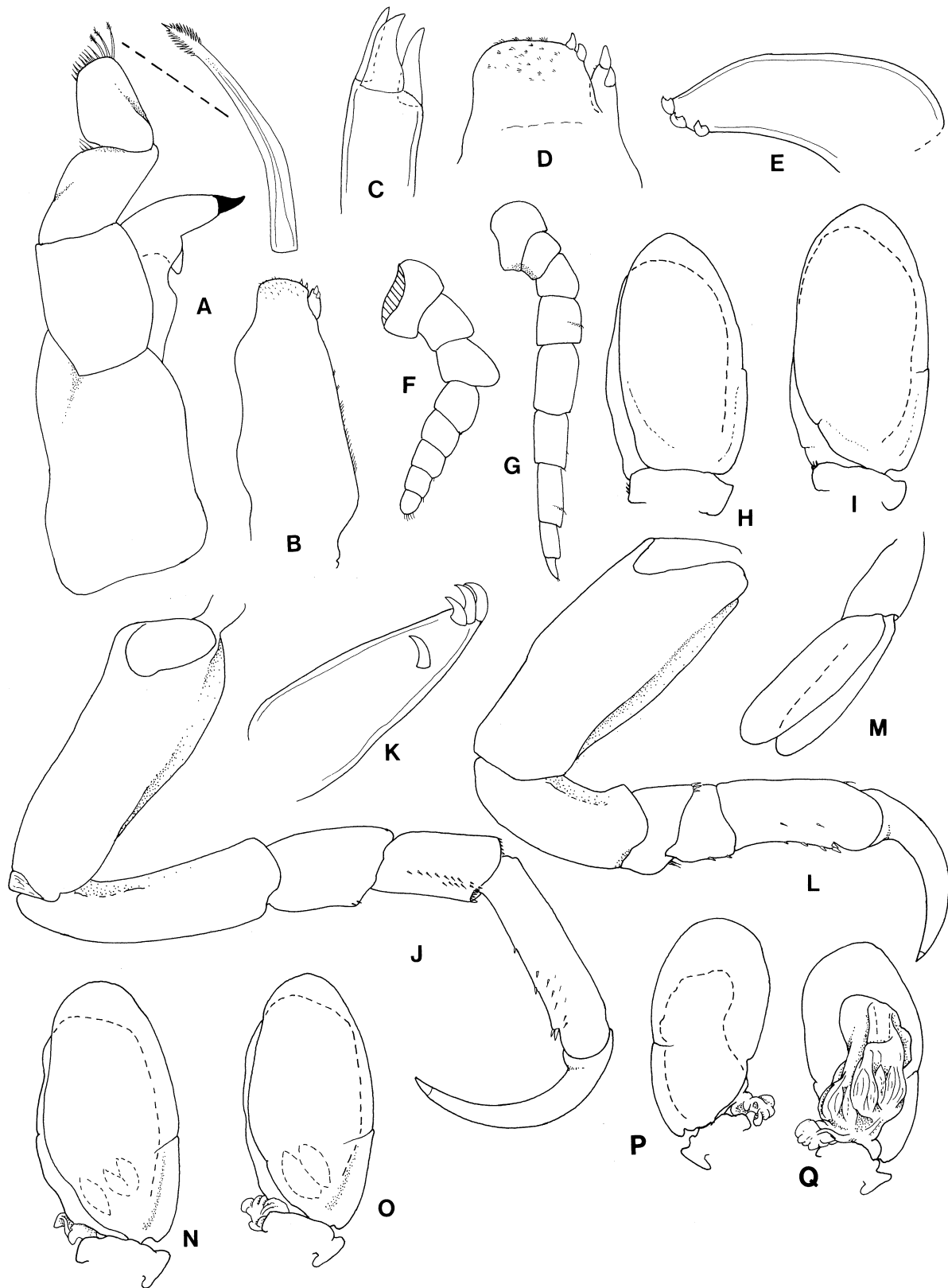


Fig. 13. *Anilocra dimidiata*. All figures female 27.0 mm (AM P36280) except where indicated. A, mandible; B, maxilla; C, maxillule apex; D, maxilla apex; E, maxilliped article 3; F, antennule; G, antenna; H, pleopod 1; I, pleopod 2; J, pereopod 7; K, maxilliped article 3, female 30.0 mm, Cleveland Bay; L, pereopod 6; M, uropod; N-P, pleopods 3 to 5; Q, pleopod 5, posterior view.

in length; lateral margins of pleonites 2–4 not produced; pleonite 5 dorsal posterolateral margins weakly produced. Pleotelson lateral margins convex, converging smoothly to medial point; lateral margins not folded up. Anterodorsal depression and mediolongitudinal ridge weakly developed, latter scarcely evident.

Antennule with 8 articles, extending slightly beyond midpoint of eye; anterodistal angle of article 3 strongly produced. Antenna with 9 articles, extending to middle or posterior of pereonite 2.

Maxilla medial lobe small. Mandible palp with 13 brush-tipped setae on distal margin of article 3. Maxilliped article 3 with 3 terminal spines.

Pereopod 1 dactylus with nodule on anterior margin, that of posterior margin scarcely developed. Pereopods 2–4 similar to 2, but increasing in length towards posterior; dactylus nodules prominent, anterior nodule large, proximal side steeply inclined, distal side gently inclined; posterior margin with 2 small nodules.

Endopods of pleopod 3 and 4 with 2 small folds; pleopod 5 endopod highly folded. Uropod peduncle about half length of endopod; exopod slightly shorter than endopod, apices of both rami rounded.

Male. Not known.

Colour. Pale tan to brown in alcohol; chromatophores over dorsal surface.

Size. Ovigerous females 26.0–32.0 mm, non-ovigerous females 21.0–24.0 mm.

Variation. In some specimens the uropod exopod apex is subacute. All Australian material accords well with the lectotype. Non-ovigerous female has 4 long

spines on maxilliped article 3.

Remarks. Characters which serve best to identify this species are antennule article 3 being only moderately produced, pleonite 1 short, posterolateral corners of pleonites 4 and 5 not produced, flat and markedly ovate pleotelson with a distinct apex (occasionally forming a caudomedial lobe), rounded uropods, pereopod 1 with moderate nodules, and pereopods 2–4 with prominent anterior nodule and 2 posterior nodules.

Anilocra monoma is very similar, and can be separated only by the pereopod nodules being far less strongly developed, and the ventrolateral margins of pleonite 1 not posteriorly produced. Examination of the types of *A. monoma* showed one specimen had 2 weak nodules on the posterior margin of the dactylus of pereopod 3, as in *A. leptosoma* (see Fig. 14).

Anilocra alloceraea Koelbel, had long been considered a synonym of *A. leptosoma*. Comparison of Indonesian material to Koelbel's figure readily identified the species, and it can be distinguished from *A. leptosoma* by the far narrower body, far more strongly produced antennule article 3, more strongly developed nodules on the dactyls of pereopods 1–4, pleonite 1 being much longer, and pleotelson lateral margins strongly turned up with the posterior margin bisinuate.

Hosts. In Australia recorded from *Nematalosa come*, in marine waters, and *Nematolosa erebi* estuarine waters.

Distribution. Recorded from the Philippines (Schiötte & Meinert, 1881), Indonesia (Bleeker, 1857) and eastern Australia from Townsville to Brisbane.

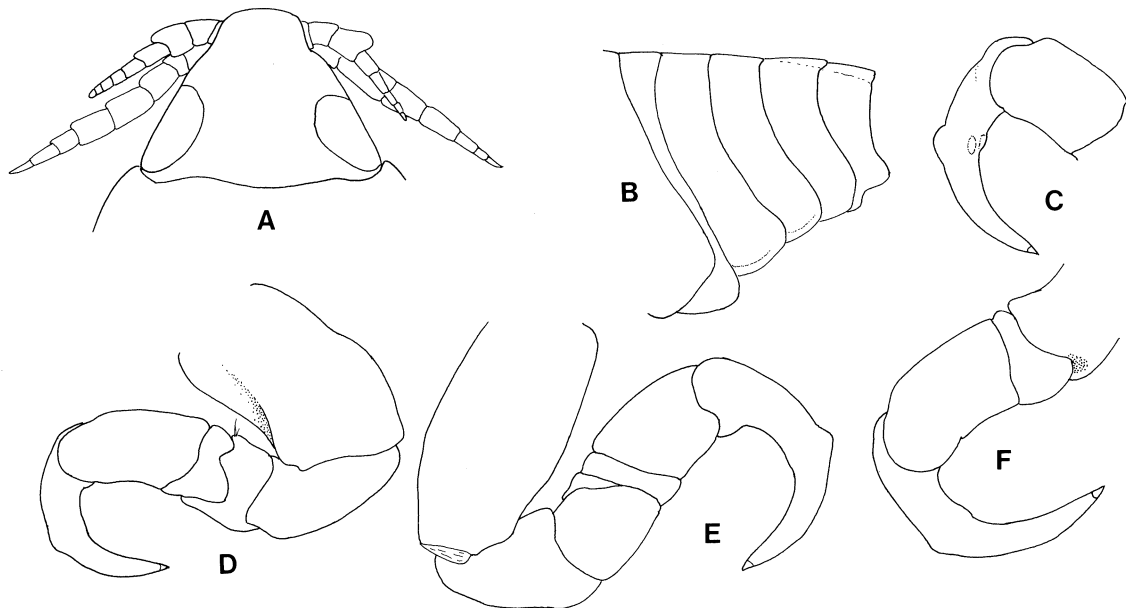


Fig. 14. *Anilocra monoma*, holotype (USNM 190881). A, cephalon; B, pleon, lateral view; C, pereopod 3 dactylus, perspective; D, pereopod 1; E, pereopod 3; F, pereopod 4.

Anilocra nemipteri n. sp.

Figs 15, 16, 17

Anilocra cavicauda.—Hale, 1926: 210, fig. 7; Beumer, et al., 1982: 31, 58 (not *A. cavicauda* Richardson, 1910).

Material examined. HOLOTYPE: female, (29.0 ovig), Northwest Shelf, WA, 18°54'S, 118°12'E, 6 June 1983, ex *Nemipterus virgatus*, silty sand bottom, coll. G.C.B. Poore

& H.M. Lew Ton on FRV *Soela* (NMV J12947).

PARATYPES: 35 females [ovig 31.0 (NMV J12948), 22.5 (NMV J12950), 21 unmeasured, non-ovig 28.5 (NMV J12949), 25.0 (NMV J12951), 11 unmeasured], same data as holotype (NMV J11181). Female (ovig 27.5), near Mornington Island, Gulf of Carpentaria, Qld, 16°51'S, 139°51'E, 24 Jan 1983, 15 m, coll. C. Jones, QFS (QM W11335). Female (ovig 20.5), Torres Strait Prawn Survey, 1983, QFS (QM W10845). Lizard

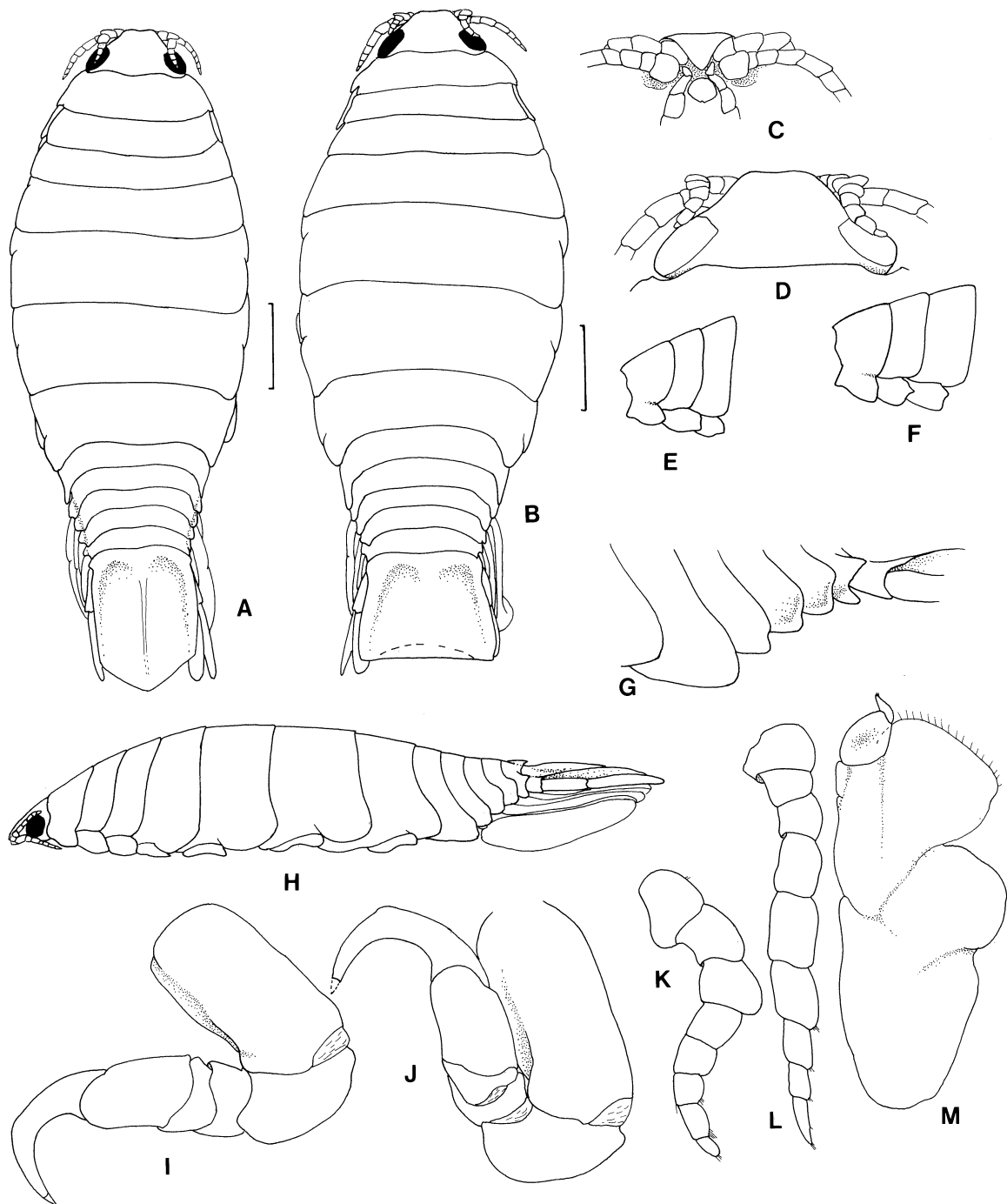


Fig. 15. *Anilocra nemipteri* n. sp., A, C, G, H, holotype; F, female #3, remainder female #1 (NMV J11181). A, dorsal view; B, dorsal view; C, frons; D, cephalon; E, anterior pereonites; F, anterior pereonites; G, pleon; H, lateral view; I, pereopod 1; J, pereopod 2; K, antennule; L, antenna; M, maxilliped. Scale lines represent 4.0 mm.

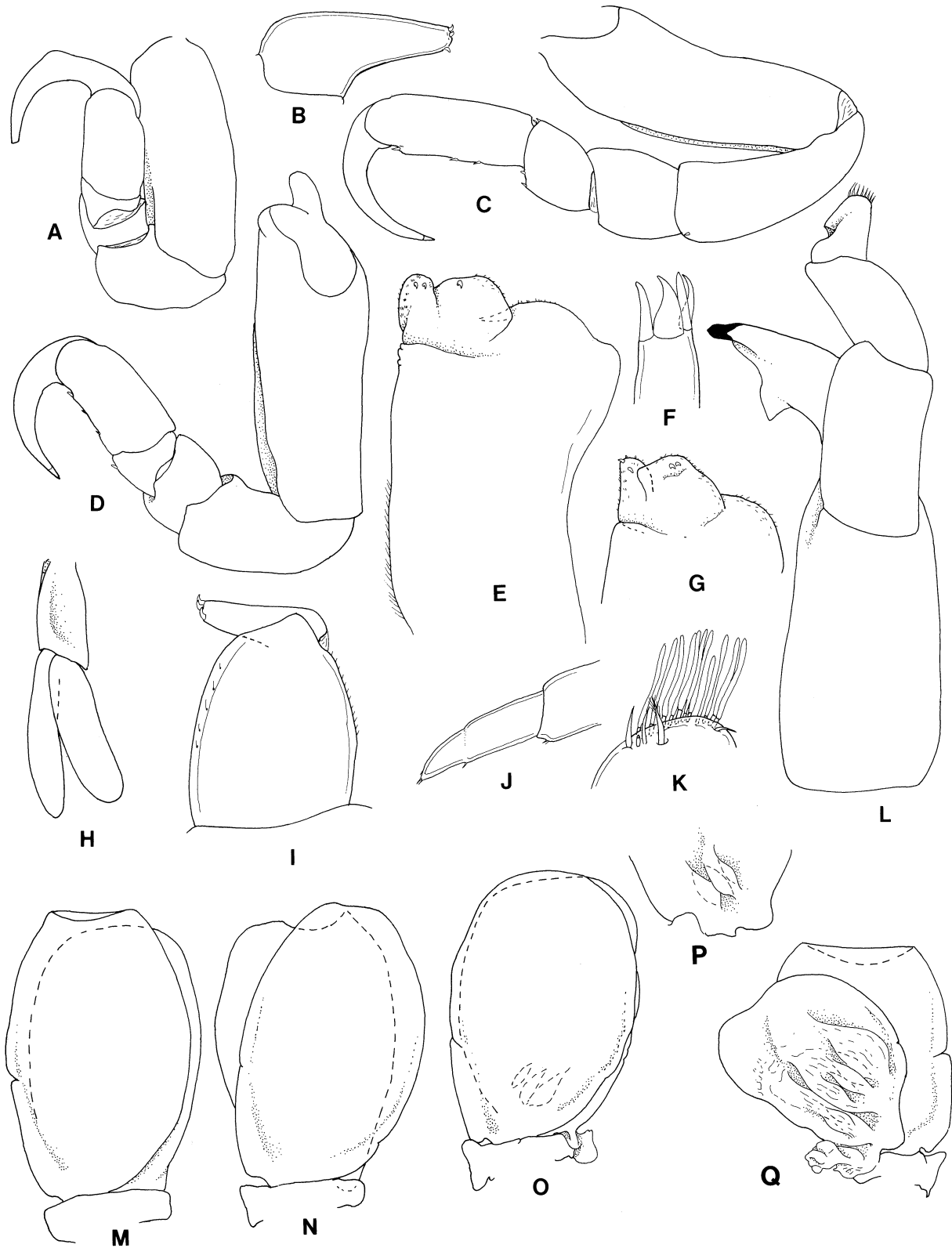


Fig. 16. *Anilocra nemipteri* n. sp., G, I, female #3, remainder female #1 (NMV J11181). **A**, pereopod 3; **B**, maxilliped article 3; **C**, pereopod 7; **D**, pereopod 6; **E**, maxilliped; **F**, maxillule apex; **G**, maxilla apex; **H**, uropod; **I**, maxilliped; **J**, antennule, terminal article; **K**, antenna, terminal article detail; **L**, mandible; **M–O**, pleopods 1 to 3 respectively; **P**, pleopod 3 endopod, posterior lobes; **Q**, pleopod 5, posterior view.

Island, Qld, northern Great Barrier Reef series – from *Scolopsis bilineatus*: female (damaged, ovig 19.0), Osprey Is., 15 July 1985, 15 m (AM P36254); male (7.0), Granite Bluffs, Lizard Island, 20 July 1985, 7 m (AM P36256); 3 females (ovig 22.0, non-ovig 13.0, immature 8.0), Osprey Is., 22 July 1985, from 3 hosts, 5 m (QM W12179); 2 females (ovig 23.0, 22.0), northern end of Granite Bluffs, Lizard Island, 23 July 1985, 2 hosts, 7 m (AM P36255); female (ovig 21.5), north-west side

of Palfrey Is., 24 July 1985, 8 m (QM W12180); female (ovig 22.0), patch reef in front of Research Station, Lizard Island, 24 July 1985, 2 m (AM P36253); from *Scolopsis margaritifera*: 2 males (9.0, 7.5), north-west side of Palfrey Is., 23 July 1985, 2 hosts, 7 m (AM P36257); male (6.0), north-west side of Palfrey Island, 24 July 1985, 8 m (AM P36252); all coll. N.L. Bruce & R.T. Springthorpe.

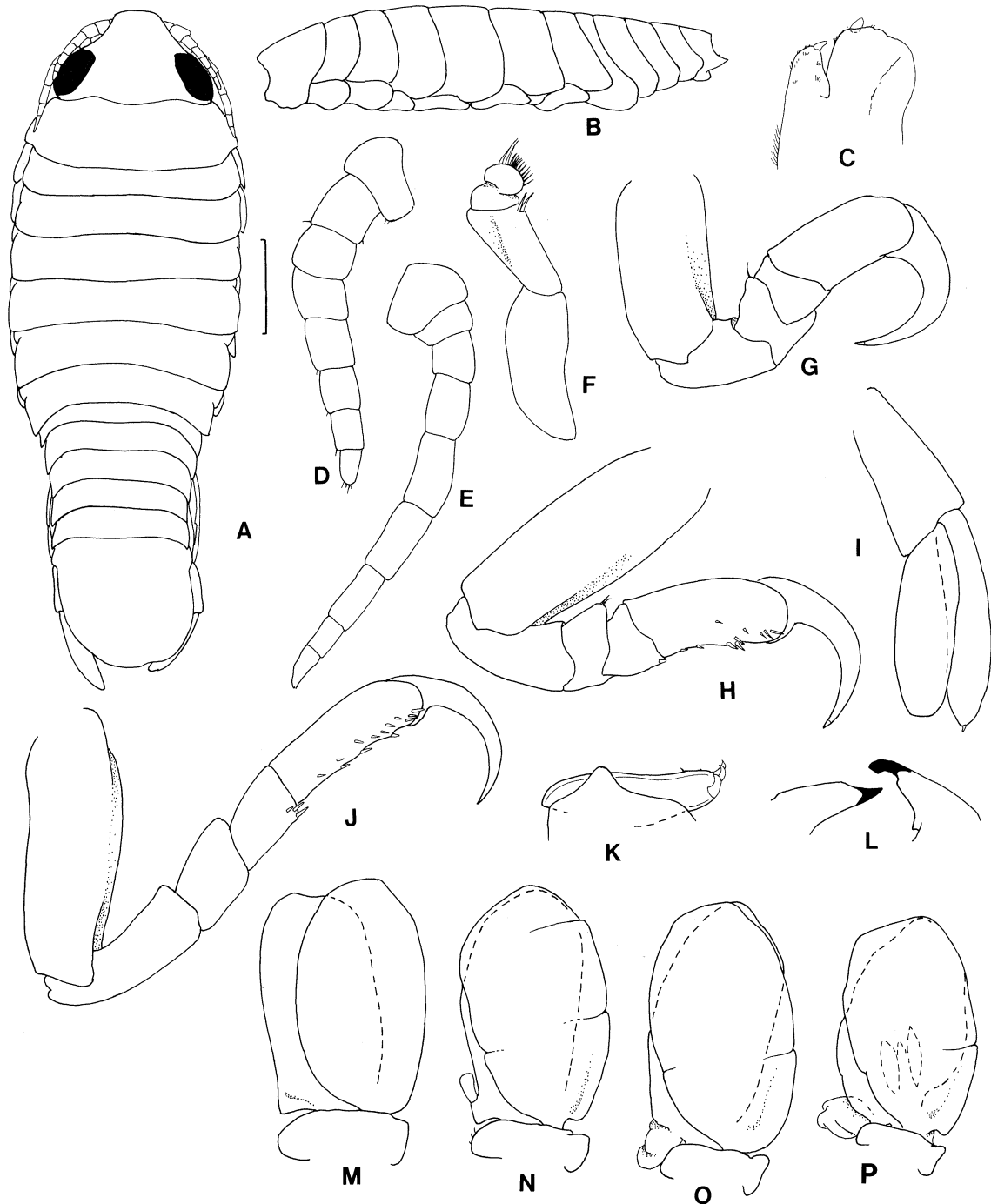


Fig. 17. *Anilocra nemipteri* n. sp., male 7.0 mm, Lizard Is. (AM P36256). A, dorsal view; B, pereon, pleon, lateral view; C, maxilla apex; D, antennule; E, antenna; F, mandible palp; G, pereopod 1; H, pereopod 6; I, uropod; J, pereopod 7; K, maxilliped article 3; L, right and left mandible incisors respectively; M-P, pleopods 1 to 3, 5 respectively. Scale line represents 1.0 mm.

Additional material. Two females, Northwest Shelf, WA, 19°58.7'S 117°00'E, 26 Oct 1983, depth 40 m, coll. T. Ward (NTM Cr4243). 10 females, Northwest Shelf, WA, 20°24.6'S 116°13.0'E, 9 June 1983, ex *Pristotis jerdoni*, 36 m, shelly sand bottom, coll. G.C.B. Poore & H.M. Lew Ton on FRV *Soela* (NMV J11182). Female, N.N.E. of Montebello Is., WA, 19°44'S 116°02'E, 3 March 1979, depth 105 m, coll. L.L. Marsh & S. Slack-Smith on FRV *Soela* (WAM 602-85). Female, east of Montebello Is., WA, 20°30'S 116°00'E, 2 Dec 1979, depth 37.5 m, coll. S. Slack-Smith & L. Marsh on FRV *Soela* (WAM 606-85). Female, south-western coast of Hermite Island, Montebello Is., WA, 12 Dec 1979, dredged 6 m, L. Marsh & S. Slack-Smith on FRV *Soela* (WAM 605-85). Female, 142 km north of Cape Lambert, WA, 19°06'S 117°17'E, 1 Oct 1982, depth 156 m, coll. L. Marsh on FRV *Soela* (WAM 601-85). 8 females, CSIRO Gulf of Carpentaria Prawn Survey, Qld, 30 Nov 1963, from *Odontoglossus tolu**, coll. D. F. McMichael (AM P36281). 8 females, CSIRO Gulf of Carpentaria Prawn Survey, Qld, Dec 1963, no other data, coll. J.C. Yaldwyn & D.F. McMichael (AM P36282). 7 females, CSIRO Gulf of Carpentaria Prawn Survey, from various trawled fishes (*Nemipterus**), no other data (AM P36283). 2 females, (ovig 31.0, 29.0), Gulf of Carpentaria Prawn Survey, 6 Oct 1964, coll. R.W. George on *Rama* (WAM 597-85). Female, north side of Clack Reef, Qld, 14°03'S 144°15'E, 24 Feb 1979, ex *Scolopsis bilineatus*, coll. AIMS, QM, AM (QM W8937). Female (ovig 17.5), north-eastern point, Fantome Island, Palm Group, Qld, 20 April 1986, 18 m, on *Pentapodus setosus*, coll. N.L. Bruce, R.T. Springthorpe (AM P36747). Male (7.0), 19 Apr 1986, on *Scolopsis monogramma*, all data as previous (AM P36748).

Type locality. North West Shelf, WA, 18°54'S, 118°12'E.

Description of female. Body 2.4–3.0 times as long as wide, lateral margins convex in dorsal view. Rostrum not abruptly narrowed, anterior margin medially indented. Eyes about 0.3 width of cephalon. Pleonite 1 longest, posterolateral margin indented, then posteriorly produced; posterolateral margins of pleonites 2–4 very thin; dorsal posterolateral angles of pleonite 5 not produced. Pleotelson lateral margin bent dorsally, posterior margin abruptly angled with wide caudomedial lobe.

Antennule extending to midpoint of eye, with 8 articles, anterodistal margin of article 3 produced. Antenna extending to middle of pereonite 1, with 10 articles.

Mandible palp article 3 folded, with 9 terminal setae. Maxillule with 4 terminal spines. Maxilla medial lobe with 2 small spines, lateral with 1. Maxilliped article 3 with terminal spines.

Pereopods robust; nodule present on dactylus of pereopods 1–4, weakly developed on pereopod 1 distinct on pereopods 2 to 4. Pereopods 6 and 7 each with spine on posterodistal angle of carpus and 3 spines on posterior margin of propodus.

Pleopods broadly rounded; endopods of pleopods 3 and 4 with 3 small lobes, endopod of pleopod 5 with 3 large folded lobes; proximomedial lobe of pleopods 3–5 endopods prominent and folded. Uropods not extending beyond posterior of pleotelson, rami subequal in length, endopod wider than exopod.

Male. Rostrum not indented. Pleonite 1 posterolateral

margin weakly produced. Pleotelson posterior margin evenly rounded, lateral margins not turned up. Antennule article 3 not produced. Mandible asymmetrical, right incisor acute, left blunt. Pereopods 1–4 without nodules on dactylus; pereopods 6 and 7 with propodus more spinose than female. Pleopod folding weakly developed.

Colour. In life, densely covered by chromatophores; on *Scolopsis bilineatus* and *S. margaritifer* appearing very dark brown; pale tan on *S. monogramma* and *Pentapodus setosus*. Preserved specimens vary from pale tan to dark brown.

Size. Ovigerous females 19.0–31.0 mm, non-ovigerous females 13.0–28.5 mm; males 6.0–9.0 mm.

Variation. Body width varies from 2.4–3.0 times as long as wide. The folding on the endopods of pleopods 3 and 4 is less developed in non-ovigerous and small specimens under about 25 mm. The shape of the posterior margin of the pleotelson is frequently irregular, often appearing damaged.

Specimens from *Pristotis jerdoni* are smaller in size (ovigerous females measuring 16.5–21.0 mm), have the posterolateral margins of pleonite 5 slightly more acute, and lack the indentation at the posterolateral margin of pereonite 1.

Specimens from *Scolopsis bilineatus* taken at Lizard Island are consistently wider than those from *Nemipterus*, but are otherwise identical.

Remarks. This species can be recognised by the broad ovate body shape, short antennule and antenna, weakly developed pereopod nodules on the dactylus anterior margin, and pleonite 1 long with posteriorly directed posterolateral margins.

Hosts. *Nemipterus virgatus*, *N. tolu**, *Scolopsis bilineatus*, *S. margaritifer*, *S. monogramma*, *Pentapodus setosus*, *Pristotis jerdoni*. On nemipterids at Lizard Island and the Palm Group, there was only ever one isopod per host, always attached above and slightly posterior to the eye.

Distribution. North West Shelf of Western Australia, Gulf of Carpentaria, Torres Strait; Lizard Island and Palm Group of the Great Barrier Reef.

Etymology. The name is derived from that of the most common host genus.

Anilocra soelae n. sp.

Figs 18, 19

Material examined. All North West Shelf, WA, collected by FRV *Soela*. HOLOTYPE: female, (ovig 16.0), 19°03.5'S 119°03.6'E, 28 April 1983, depth 80 m, coll. A.J. Bruce (NTM Cr4244).

PARATYPES: 3 females (15.5, 15.5, non-ovig 14.0), same data as holotype (NTM Cr4244). Female (ovig 15.5), 18°56.8'S 118°45.2'E, 7 Dec 1982, depth 86 m, coll. T. Ward (AM P36272). Female (ovig 15.0), 19°44.0'S 117°54.6'E, 20 Sept 1983, depth 56 m, coll. T. Ward (AM P36271).

Type locality. North West Shelf, Western Australia, 19°03.5'S 119°03.6'E.

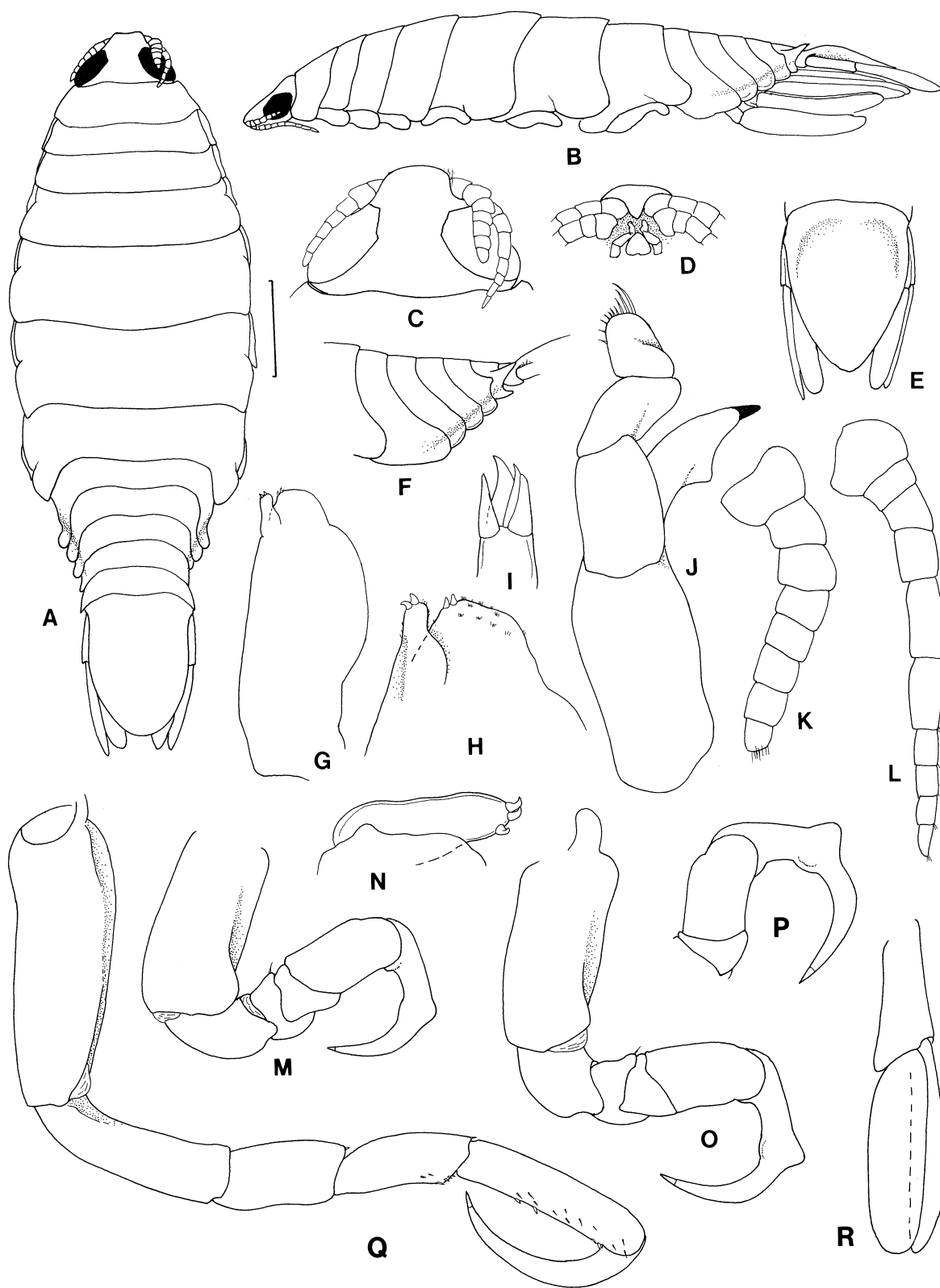


Fig. 18. *Anilocra soelae* n. sp., A–D, holotype, remainder female 15.5 mm (NTM Cr4244). **A**, dorsal view; **B**, lateral view; **C**, cephalon; **D**, frons; **E**, pleotelson, perpendicular view; **F**, pleon, lateral view; **G**, maxilla; **H**, maxilla apex; **I**, maxillule apex; **J**, mandible; **K**, antennule; **L**, antenna; **M**, pereopod 1; **N**, maxilliped article 3; **O**, pereopod 2; **P**, pereopod 4; **Q**, pereopod 7; **R**, uropod. Scale line represents 3.0 mm.

Description of female. Body about 2.8 times as long as wide, dorsum smoothly vaulted, coxae visible in dorsal view. Eyes about 0.5 width of cephalon. Pleonite 1 longest, pleonites 2–5 about equal in length; pleonites 1–4 becoming progressively narrower towards posterior. Lateral margins of pleonites 1–3 bent laterally; posterolateral margins of pleonite 5 acute. Pleotelson lateral margins weakly turned up, converging smoothly to rounded apex.

Antennule extending to posterior of eyes; article 3 anterodistal angle not produced. Antenna with 10 articles, extending to pereonite 2.

Mandible palp article 2 with distomedial margin lobate; article 3 with about 9 setae. Maxillule with 4 terminal spines. Maxilla with 2 spines each on medial and lateral lobe respectively. Maxilliped article 3 with 3 terminal spines.

Pereopod 1 dactylus with prominent nodule on anterior margin, weak nodule on posterior margin. Pereopods 2–4 with dactylus nodules progressively increasing in prominence; posterior margin of dactylus with 2 nodules. Pereopod 6 with 3 spines on propodus,

merus with single spine at posterodistal angle. Pereopod 7 propodus with 3 spines on palm, scattered small spine on medial margin.

Pleopods 3–5 with prominent, highly folded proximomedial lobe on endopod; peduncle lateral margin with prominent lobe. Endopods of pleopods 3 and 4 each with 3 weakly developed lobes, endopod of pleopod 5 with 3 large folded lobes. Uropod with rami rounded, subequal in length, extending clearly beyond posterior of pleotelson.

Colour. Pale tan with abundant brown chromatophores.

Size. Females 14.0–16.0 mm.

Remarks. This species is readily identified by the smoothly rounded pleotelson, uropods extending beyond the posterior margin of the pleotelson, pleonite 1 being longest, ventrolateral margins of pleonites 1–3 being bent upwards, and antennule article 3 not being produced.

The most similar species is *Anilocra dimidiata*, but *A. soelae* differs from that species in having a shorter

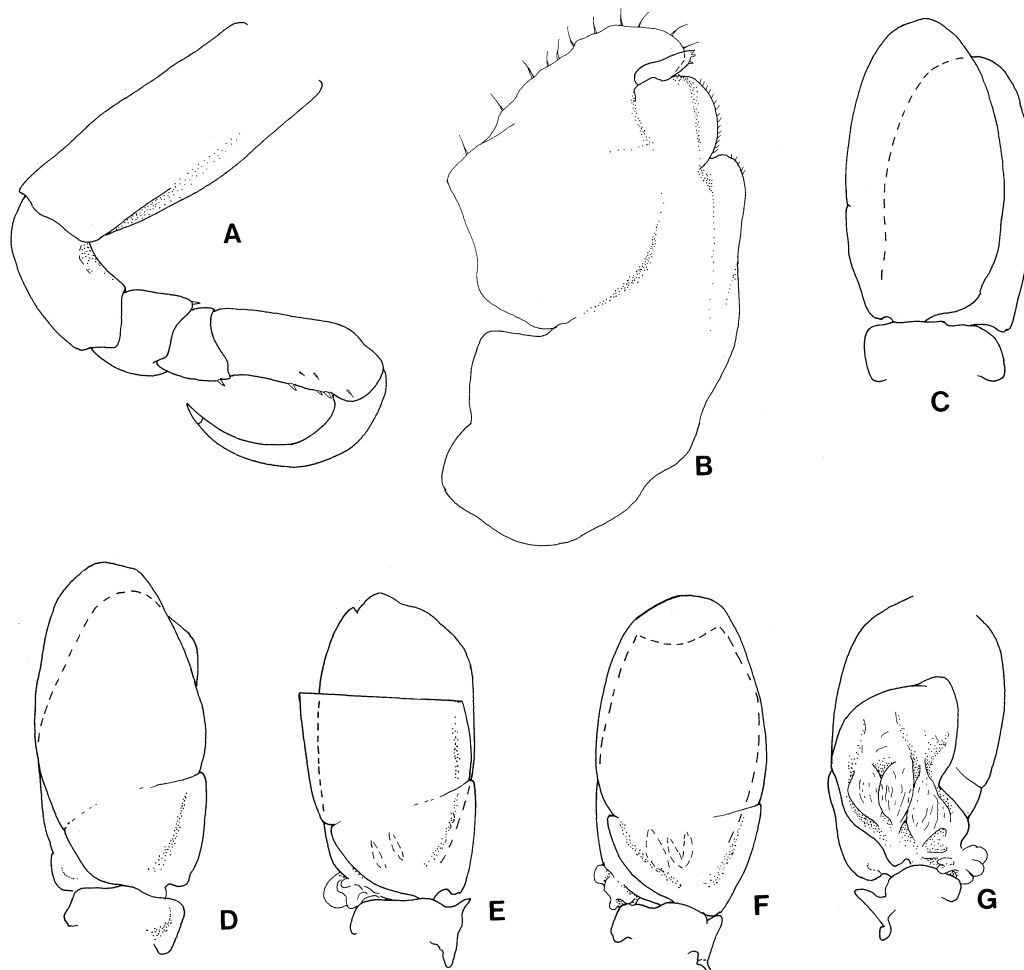


Fig. 19. *Anilocra soelae* n. sp., female 15.5 mm (NTM Cr4244). A, pereopod 6; B, maxilliped; C, right pleopod 1; D–F, left pleopods 2 to 4 respectively; G, left pleopod 5, posterior view.

antennule, more prominent pereopod nodules, an evenly rounded pleotelson, posterolateral margin of pleonite 5 not strongly produced and a shorter uropod exopod.

Host. Not known.

Distribution. North West Shelf, Western Australia.

Etymology. Named after the research vessel FRV *Soela*.

Anilocra koolanae n. sp.

Figs 20, 21

Material examined. HOLOTYPE: female, (ovig 29.0), off Koolan Island, WA, 8 Aug 1970, coll. F.C. van Ingen (WAM 598-85).

Type locality. Koolan Island, Yampi Sound, Northern WA, 16°08'S 123°45'E.

Description. Body about 3.0 times as long as wide. Eyes small, about 0.3 width of cephalon. Pereonite 7 less than half as long as pereonite 6. Pleonite 1 not visible in dorsal view. Pleonites with lateral margins strongly produced ventrally, concealing pleopod peduncles in lateral view. Pleotelson about twice as long as wide, more than twice as long as pleon; lateral margins convex, converging to narrowly rounded caudomedial lobe; lateral margins not upturned; medial longitudinal ridge strongly developed.

Antennule extending to posterior of eye, article 3 anterodistal margin weakly produced. Antenna with 10 articles, extending to posterior of pereonite 2.

Mandible palp broad, article 2 distolateral margin produced to form lobe; article 3 bent laterally with 11 setae along distomedial margin. Maxilliped article 3 with 3 terminal spines.

Pereopods all robust; pereopods 1-4 with nodule on anterior margin of dactylus. Pereopod 7 with 4 spines on posterolateral margin of propodus. Pereopods 5 and 6 with posterolateral margin of basis forming distinct keel.

Pleopod 1 exopod basally wide; lateral margin with obvious partial suture. Pleopod 2 similar to 1, but peduncle medial and lateral margins formed into lobes. Pleopods 3-5 endopods with prominent proximomedial lobe; exopods with distinct partial suture; pleopod 5 endopod with 3 large folds. Uropods extend clearly beyond pleotelson; endopod slightly longer than exopod; both rami narrowing gradually to pointed apex.

Male. Not known.

Size. Holotype, 29.0 mm.

Colour. Pale tan with sparsely scattered brown chromatophores.

Remarks. The long pleotelson with its narrowly produced apex, pereonite 7 less than half the length of pereonite 6, long narrow uropods, and the pleon with only 4 visible pleonites immediately differentiates this species from all others in the genus. The antennule has the anterodistal angle of article 3 produced, and the anterior margin of the dactylus of pereopods 1-4 have a nodule. These characters are also present in the *A.*

dimidiata - *A. leptosoma* complex of species, but *A. koolani* is readily separated from those species by the characters listed above.

Host. Known only from the type locality.

Etymology. The name is taken from that of the type locality.

Anilocra apogonae n. sp.

Figs 22, 23

Anilocra sp.—Monod, 1976: 857, figs 8-12.

Material examined. HOLOTYPE: female (ovig 19.5), off Saint Helena Is., Moreton Bay, Qld, 24 Nov 1981, ex *Apogon fasciata*, coll. R.C. Willan (QM W12181).

PARATYPES: female (ovig 12.5), Coral Bay, Cobourge Peninsula, NT, 11°12.0'S 132°03.0'E, May 1983, ex *Apogon cooki*, coll. N.L. Bruce, (NTM Cr4245). Female (non-ovig 16.0), north side of Prince of Wales Is., Torres Strait, 2 July 1976, from tide pools, coll. D. Brown & W. Ponder (AM P36258). Lizard Island Group, Qld, Northern Great Barrier Reef, all ex *Cheilodipterus quinquelineatus*: female (imm 8.5), north-west Palfrey Is., 14 July 1985, 6 m (AM P36262); 2 females (ovig 12.0, non-ovig 11.5), north-west Palfrey Is., 15 July 1985, 6 m (AM P36260); 2 females (ovig 13.0, 11.5), lagoon entrance, 17 July 1985, 17 m (AM P36264, P36265); female (ovig 14.0), North Point Reef, Lizard Island, 18 July 1985, 12 m (AM P36259); female (ovig 11.5), Granite Bluffs, Lizard Island, 20 July 1985, 10 m (AM P36266); 3 females (ovig 16.0, non-ovig 12.5, 12.0), lagoon entrance patch reef, 21 July 1985, 10 m (AM P36263); female (non-ovig 11.0), eastern lagoon, 22 July 1985, 8 m (AM P36261), coll. N.L. Bruce, R. Springthorpe. 3 females (ovig 14.5, 13.5, non-ovig 11.0), male (9.5 mm), Bushy-Redbill Reef, 12°57'S 150°05'E, GBR, Qld, June 1975, no host (QM W10846). 2 males (12.5, 11.0), Magnetic Island, off Townsville, Qld, 14 July 1976, ex *Apogon cooki* (QM W10412). 2 females (ovig 16.3, 15.5), Lindeman Island, Cumberland Group, Qld, 1935, ex *Apogon cooki*, coll. G.P. Whitley (AM P11783). 2 females (ovig 15.0, non-ovig 13.0), same data as holotype (QM W10360). Female (ovig 19.0), Moreton Bay, Qld, Nov 1979, ex *Apogon fasciata*, coll. N. Svernnivg (QM W10366).

Additional material. Two females, East Point Darwin, NT, 13 Sept 1982, coll. H.K. Larson (NTM Cr2299). 3 females, Darwin, NT, 12°58'S 132°10'E, 19 Oct 1981, 27 m, coll. H.K. Larson (NTM Cr2287, Cr2300). Aegathoid (7.5), north-east point, Fantome Island, Palm Group, Qld, 18 Apr 1986, on *Apogon cooki* coll. N.L. Bruce, R.T. Springthorpe (AM P36749). Female, South Percy Island, Qld, coll. Sergeant L. Lockwood (SAM C1729, examined by Hale, 1926). Female, Moreton Bay, Qld, 31 Mar 1975, ex "Goatfish"* (QM W10989). Female, off Saint Helena Island, Moreton Bay, Qld, 2 Sept 1979, 6 m (QM W11012). 3 females, Moreton Bay, Qld, no date, apogonid hosts. (QM W10418).

Type locality. Off Saint Helena Island, Moreton Bay, south-eastern Queensland, ca. 27°23'S 153°14'E.

Description of female. Body about 2.5 times as long as wide, dorsum strongly vaulted; lateral margins of pereonites 4-6 thickened. Pleonite 1 about twice as long as pereonite 2; pleonites 2-5 subequal in length; dorsal posterolateral margin of pleonites 4 and 5 strongly produced, acute. Pleotelson about 1.5 times as long as wide, lateral margins strongly bent dorsally; posterior

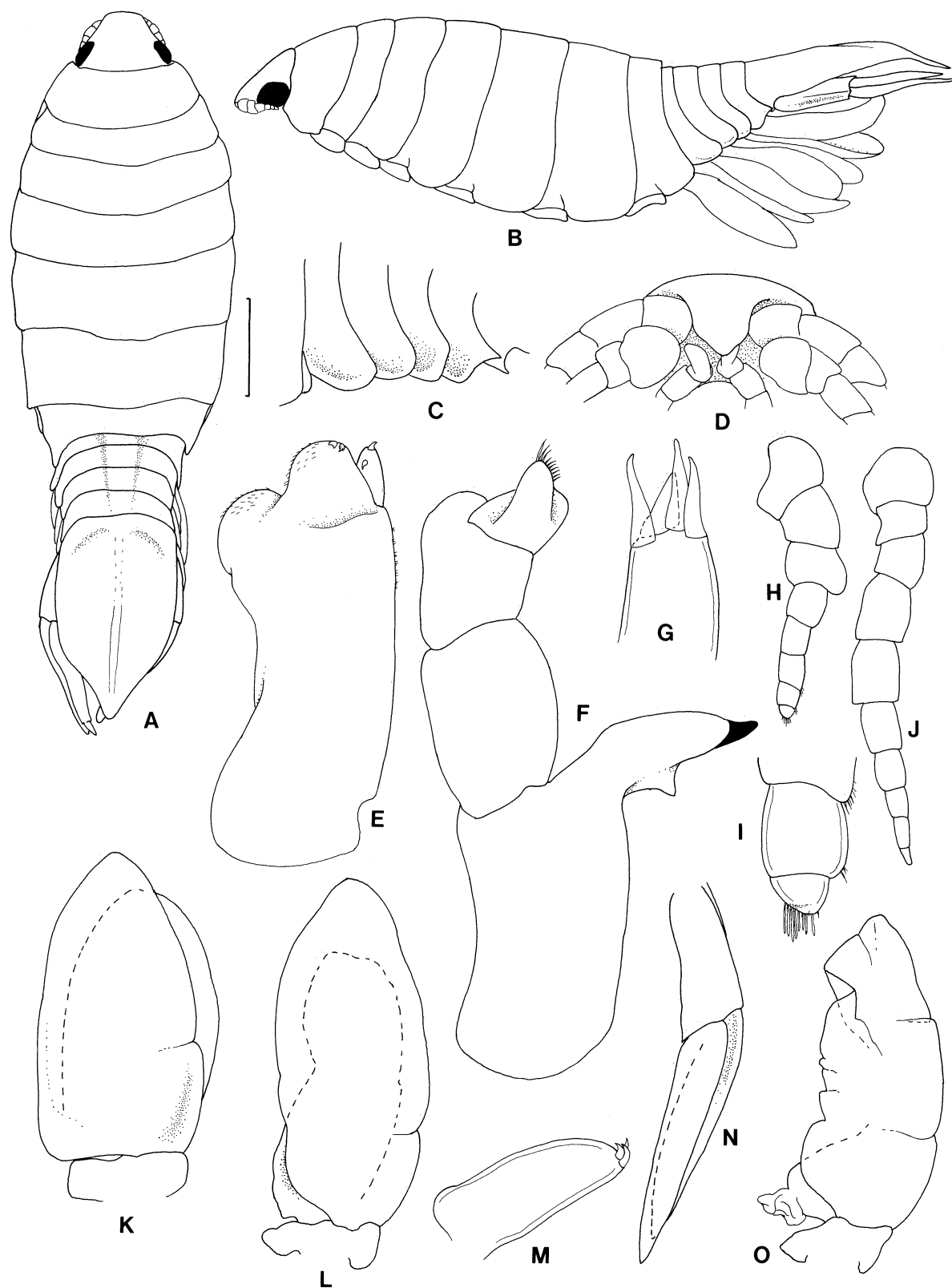


Fig. 20. *Anilocra koolanae* n. sp., holotype. **A**, dorsal view; **B**, lateral view; **C**, pleonites, lateral view; **D**, frons; **E**, maxilla; **F**, mandible; **G**, maxillule apex; **H**, antennule; **I**, antennule apex; **J**, antenna; **K**, pleopod 1; **L**, pleopod 2; **M**, maxilliped article 3; **N**, uropod; **O**, pleopod 3. Scale line represents 4.0 mm.

margin laterally indented, then forming broadly rounded lobe.

Antennule extending to posterior of eye; anterodistal margin of article 3 not produced. Antenna extending to posterior of pereonite 1, composed of 8 articles; article 5 with 3 feebly plumose setae at posterodistal angle.

Mandible palp article 2 lateral margin extended, forming lobe; terminal article with apex subtruncate, lateral margin weakly folded. Maxilla with 2 spines each on medial and lateral lobe respectively. Maxilliped article 3 with 3 spines.

Pereopod 1 dactylus without nodules; pereopods 2–4 with prominent nodule on dactylus anterior margin, less prominent nodule on dactylus posterior margin; dactylus progressively increasing in length from pereopod 1–4. Pereopod 6 carpus with 1 spine at posterodistal angle; propodus 4 spines on posterior margin and 2 small submarginal spines. Pereopod 7 propodus with 4 spines on posterior margin and 3 submarginal spines.

Pleopods 3–5 proximomedial lobe large, convoluted. Pleopod 3 endopod without folds, pleopod 4 endopod with weak folds, pleopod 5 endopod with 3 simple folds. Uropod rami extending beyond posterior of pleotelson; exopod about two thirds width of, and slightly larger than endopod, curving medially; endopod straight, distal margin broadly rounded, both margins convex.

Male. Maxilliped article 3 with 4 spines; maxillule

with 4 terminal spines. Pleopods similar to female, but pleopod 2 with appendix masculina, and reduced folding on endopods of pleopods 3–5. Uropod exopod proportionally longer than in female. Pereopods 2–4 with nodule only on anterior margin of dactylus.

Colour. All specimens densely covered by brown chromatophores; ground colour pale yellow.

Size. Ovigerous females: 11.5–19.5 mm; non-ovigerous females: 11.0–16.0 mm; males 9.5–12.5 mm.

Variation. Body width varies from 2.5–2.8 times as long as wide. Nodules on anterior margin of the dactylus of pereopods 2–4 may vary in size, but are always conspicuously large.

Remarks. Commonly encountered on apogonid hosts, *A. apogonae* is easily recognised by the thickened margins of pereonites 5–7, absence of dactylus nodules on pereopod 1 and their prominence on pereopods 2–4, pleonite 1 being twice as long as 2, acute posterolateral angles to pleonites 4 and 5, and the strongly upturned pleotelson lateral margins.

The figures of *Anilocra* sp. from an apogonid host given by Monod (1976) agree entirely with the present material.

Hosts. *Apogon cooki*, *A. fasciatus* and *Cheilodipeturus quinquelineatus*; sight record on *Apogon cyanosoma*, Palm Group. At Lizard Island there was only ever one isopod per host, always situated in a dorsal position above the eyes. Monod (1976) recorded *Apogon kallopterus*.

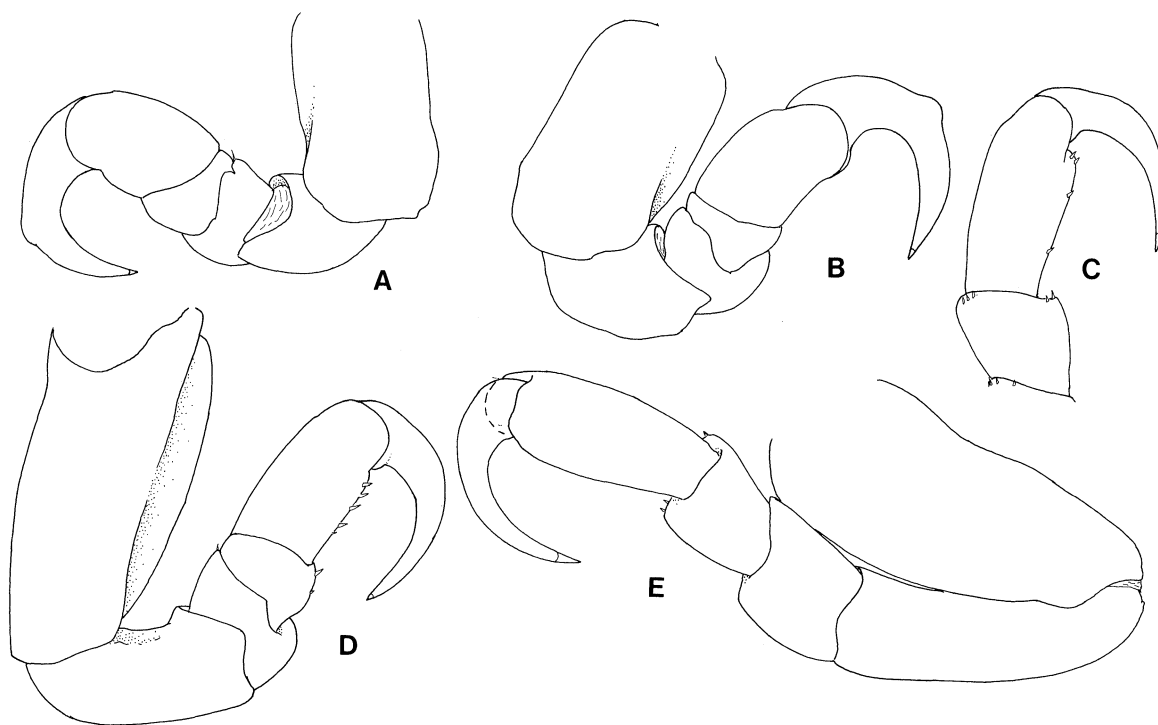


Fig. 21. *Anilocra koolanae* n. sp., holotype. A, pereopod 1; B, pereopod 2; C, pereopod 7, medial view of distal articles; D, pereopod 6; E, pereopod 17.

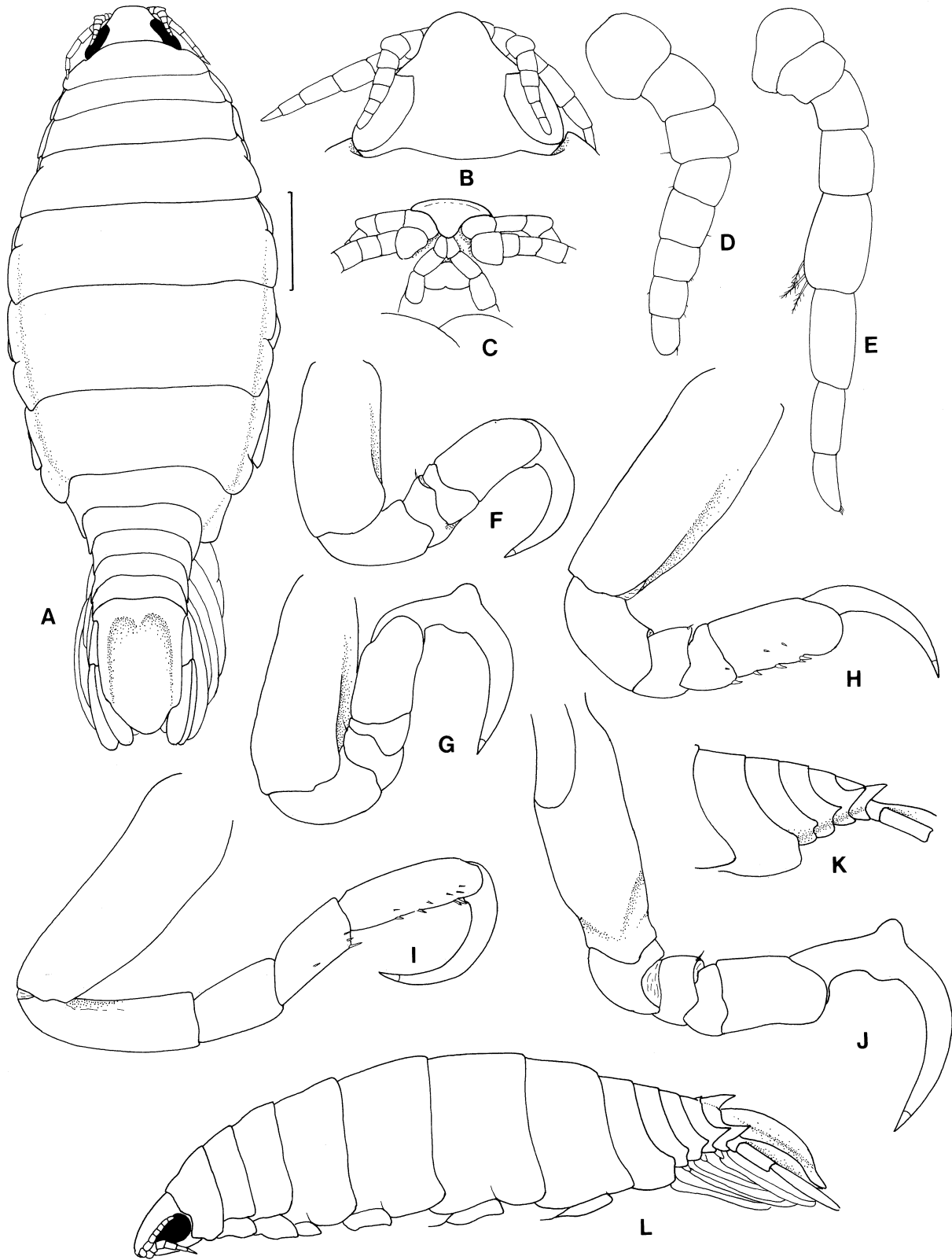


Fig. 22. *Anilocra apogonae* n. sp., A-C, K, L, holotype, remainder female 15.0 mm (QM W10360). A, dorsal view; B, cephalon; C, frons; D, antennule; E, antenna; F, pereopod 1; G, pereopod 2; H, pereopod 6; I, pereopod 7; J, pereopod 4; K, pleon, lateral view; L, lateral views. Scale line represents 3.0 mm.

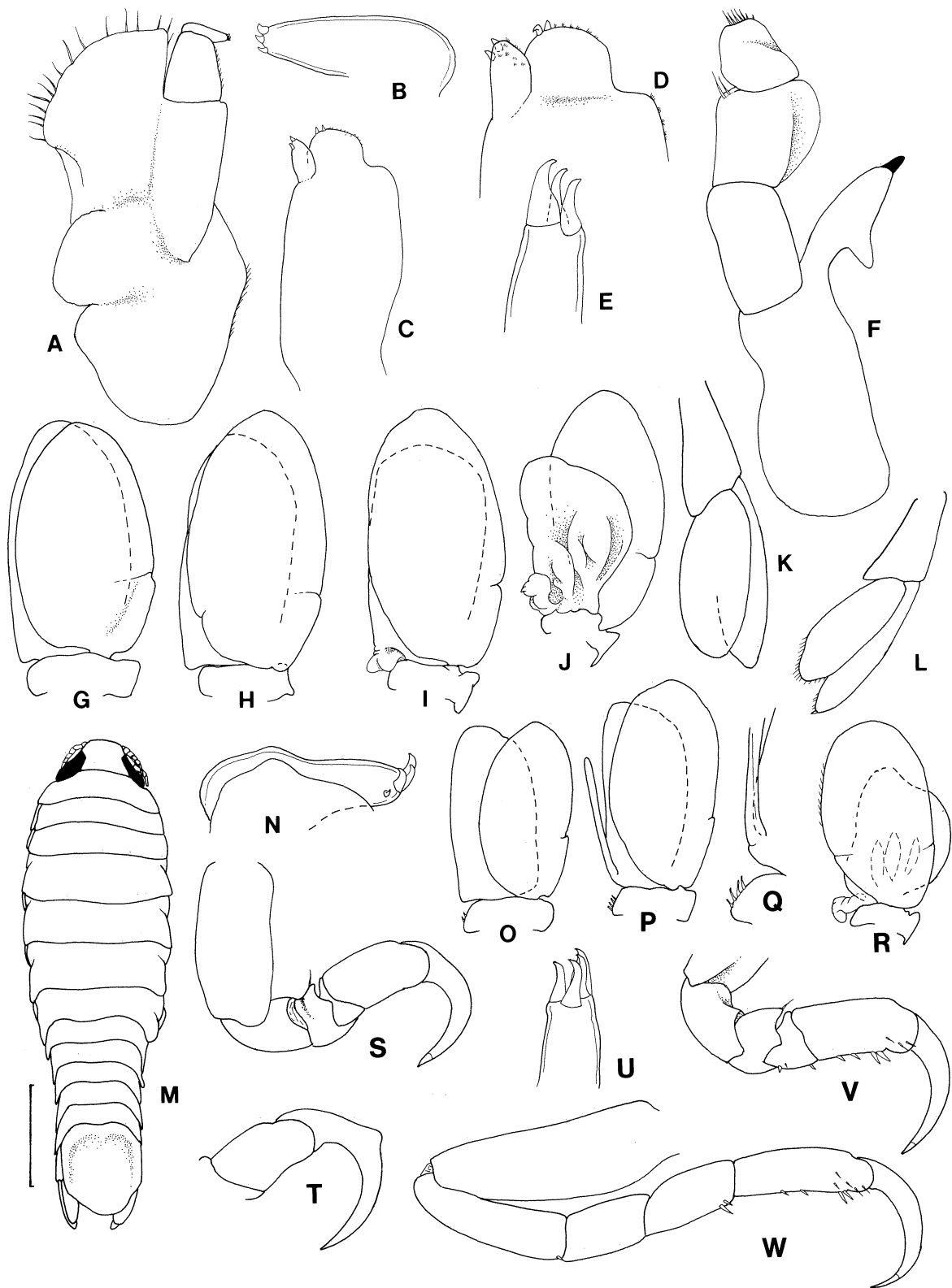


Fig. 23. *Anilocra apogonae* n. sp., A–K, female 15.5 mm (QM W10360); L–W, male 9.5 mm (QM W10846). A, maxilliped; B, maxilliped article 3; C, maxilla; D, maxilla apex; E, maxillule apex; F, mandible; G–J, pleopods 1 to 3, 5 respectively; K, uropod; L, uropod; M, dorsal view; N, maxilliped apex; O, pleopod 1; P, pleopod 2; Q, pleopod 2, medial margin detail; R, pleopod 5; S, pereopod 1; T, pereopod 2, propodus dactylus; U, maxillule apex; V, pereopod 6, distal articles; W, pereopod 7. Scale line represents 2.0 mm.

Distribution. On the mainland coast and continental islands, but not recorded from outer reefs. Cobourg Peninsula and Darwin, Northern Territory. Torres Strait, Lizard Island, Palm Group, Magnetic Island, Townsville, Lindeman Island, South Percy Island and Moreton Bay, Queensland. Also Ambon, Indonesia (Monod, 1976).

Etymology. The name is derived from that of the type host genus.

Anilocra longicauda Schiödte & Meinert

Figs 24, 25

Anilocra longicauda Schiödte & Meinert, 1881: 113, pl. 8 figs 7, 8.—Monod, 1934: 12, pls 20, 21, 25A-C; Trilles, 1975a: 308, pl. 1 figs 4, 5.

Anilocra dimidiata.—Richardson, 1910: 18 (part).

Unconfirmed: Gerstaecker, 1882: 261; Nierstrasz, 1915: 83; 1931: 129; Serène, 1937: 69.

Material examined. LECTOTYPE: female (ovig 35.0), Singapore, 9 Mar 1872, udvendig paa Hardit af Fisk, coll. H. Koch (ZMC). PARALECTOTYPE: female (ovig 27.0), Poulo Condor (Cochin chine), R. Germain, 446-68, label No. 43 (male missing) (MNHN Is. 504).

Non-type: female (ovig 41.0), north of Port Hedland, WA, 18/19 Apr 1983, depth 80 m, coll. R. Williams (NTM Cr2292). Female (ovig 39.0), Marion Reefs, Qld, ca. 19°15'S 152°13'E, 23 Aug 1977, ex *Priacanthus* sp., depth 8 m, coll. N. Coleman (AM P36286). 2 females (ovig 51.0, non-ovig 32.0), Swains Reefs, Qld, ca. 22°4'S 152°30'E, 6 June 1967, ex *Plectorhynchus goldmani*, coll. B. Goldman (AM P36267).

Additional material. Female (head missing), North West Shelf, WA, 19°5.5'S 118°25.5'E, 2 June 1985, coll. B.C. Russell (NTM Cr4246). 2 females, North West Shelf, WA, 19°08.6'S 118°03.5'E, 16 April 1983, depth 82–84 m, on *Plectorhynchus pictus*, coll. P. Blyth on FRV *Soela* (NTM Cr2311). 2 females, Krakatua Island, Indonesia, 6°06'S 105°26'E, 15 Sept 1984, no host. La Trobe University 1984 Krakatua Expedition (NMV J12952, one at Museo Zoologicum, Bogor, Indonesia). 2 females (USNM 40997, 40999), Philippines, examined by Richardson (1910).

Types. Schiödte & Meinert (1881) examined 5 specimens, listing 3 from Singapore and 2 from Poulo Condor. Only two type specimens were located and the specimen from Singapore is designated as lectotype. The type specimens examined here do not agree with Schiödte & Meinert's lengths for ovigerous females (41–43.5 mm) but rather to the length for non-ovigerous females (31–37.5 mm).

Type locality. Singapore, 1°15'N 103°50'E, the locality of the lectotype.

Description of female. Body about 3.5 times as long as wide, dorsal surface strongly vaulted; coxae scarcely visible in dorsal view. Rostrum anterior margin weakly indented in dorsal view. Eyes occupying about 0.4 width of cephalon. Pleon about 0.6 width of pereon. Pleonite 1 largely concealed by pereonite 7; posterolateral margins of pleonites 1–3 rounded; dorsal posterolateral margins of pleonite 5 acute, weakly produced.

Pleotelson flat, lateral margins not upturned; lateral margins curving to form subacute apex.

Antennule extending to posterior of cephalon. Antenna with 10 articles, extending half way along pereonite 1.

Mandible palp article 2 distomedial margin produced to form lobe; article 3 medial margin folded, lateral margin with 14 setae. Maxillule with 4 terminal spines. Maxilla with 2 spines, each on medial and lateral lobes respectively. Maxilliped article 2 with 2 terminal spines.

Pereopods 1–4 short, dactylus robust, abruptly curved, without nodules. Pereopods 5–7 with dactylus smoothly curved.

Pleopods prominent in dorsal view. Pleopod 1 with 4 coupling hooks on peduncle medial margin. Pleopods 3 and 4 each with folded endopod; pleopod 5 endopod with massive and complex folding. Pleopods 3–5 endopods with prominent proximomedial lobe, peduncle lateral margin with small proximal appendiculate lobe. Uropods not extending beyond pleotelson, exopod slightly shorter than endopod, both rami bluntly rounded.

Male. None examined.

Colour. Very dark brown, appearing black.

Size. Females 27.0–31.0 mm.

Variation. The type material and the smaller Australian specimens (NTM Cr2311, 23.0 and 30.0 mm) have the pleotelson more broadly rounded than the large specimens from *Priacanthus* and *Plectorhynchus*. The non-ovigerous female (AM P36286) had 3 spines on maxilliped article 3, 3 spines on the maxillule and more spines on pereopod 7.

Remarks. This large species is easily recognised by the short and abruptly recurved anterior pereopod dactyls which totally lack nodules, short antenna, pleonite 1 being largely concealed by pereonite 7, and the long and flat pleotelson.

Monod (1934) included *Anilocra cavicauda* Richardson in the synonymy for *A. longicauda*, this later being followed by Trilles (1975). Examination of the type of *A. cavicauda*, shows it to be abundantly distinct from *A. longicauda* with nodulose pereopods, straight sided and upturned pleotelson lateral margins, and slender uropods extending beyond the pleotelson. Supplementary notes and figures for *A. cavicauda* are given elsewhere in this work.

Hosts. *Plectorhynchus goldmani*, *Diagramma picta* and *Priacanthus* sp.; sight record on caudal peduncle of *D. picta* at Lizard Island.

Distribution. Swains Reefs, Great Barrier Reef, Marion Reef, Australian Coral Sea; North West Shelf of Western Australia; Krakatua, Indonesia; previous records from Singapore (Schiödte & Meinert, 1881), Annan (Monod, 1934) and Poulo Condor, Vietnam (Schiödte & Meinert, 1881); Philippines (Richardson, 1910, as *A. dimidiata*).

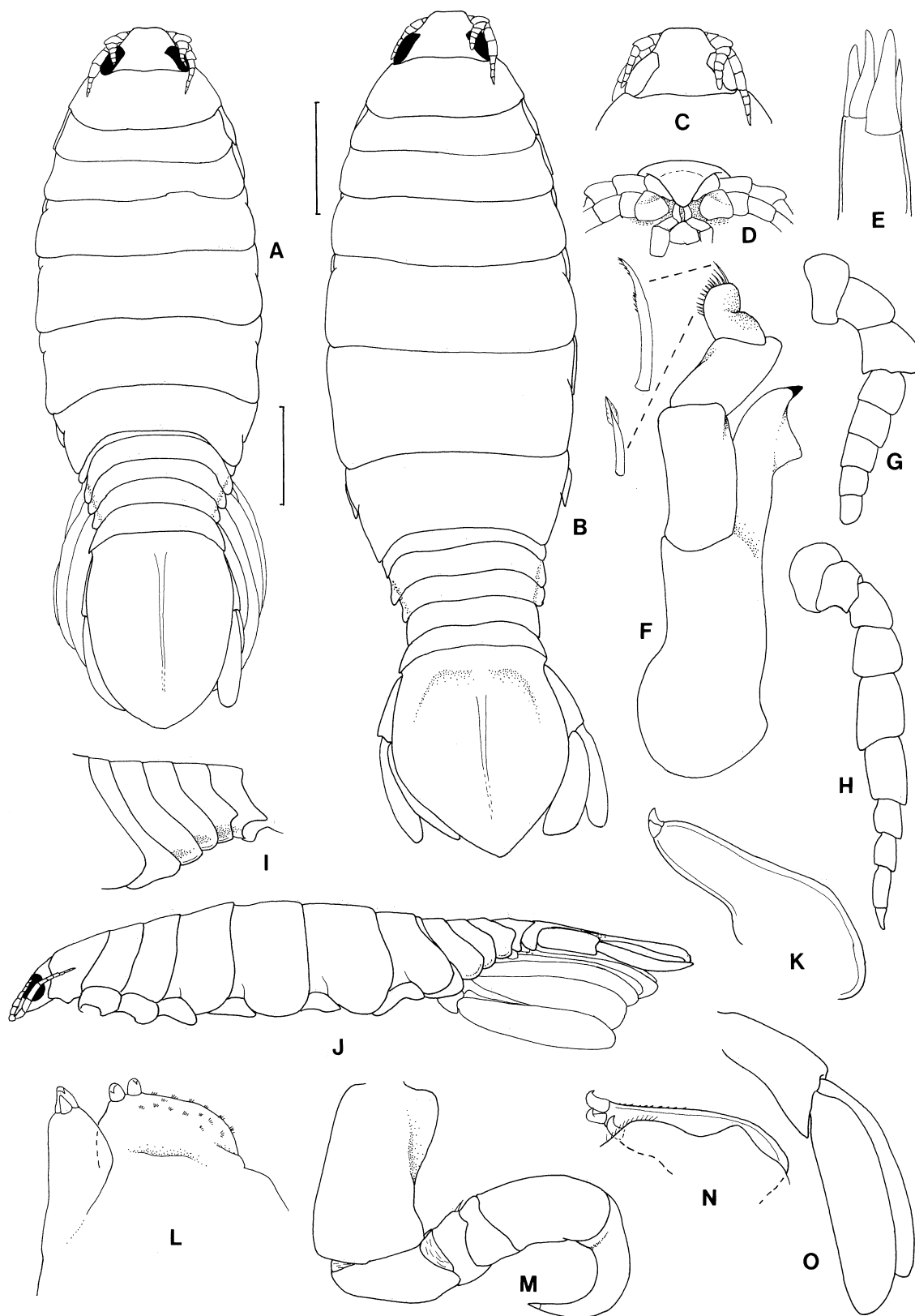


Fig. 24. *Anilocra longicauda*, A, J, lectotype; N, female 32.0 mm, Swains (AM P36267); remainder female 39.0 mm, ex *Priacanthus* (AM P36286). A, dorsal view; B, dorsal view; C, cephalon; D, frons; E, maxillule apex; F, mandible; G, antennule; H, antenna; I, pleon, lateral view; J, lateral view; K, maxilliped article 3; L, maxilla apex; M, pereopod 1; N, maxilliped article 3; O, uropod. Scale lines represent 5.0 mm.

Anilocra ankistra n. sp.

Figs 26, 27, 28

Material examined. All material from North West Shelf, WA.

HOLOTYPE: female (ovig 43.5), north-west of Beagle Bay, 15°10.4'S 121°04.7'E, 11 Feb 1984, depth 449 m, Engel trawl over muddy bottom, coll. FRV *Soela* (WAM 608-85).

PARATYPES: female (ovig 36.0), 127 nautical miles north-

west of Port Hedland, 18°26'S 117°36'E, 11 April 1982, depth 418 m, coll. L.M. Marsh on FRV *Soela* (WAM 603-85). Female (ovig 20.0), 17°59.0'S 118°19.9'E, 27 Feb 1984, depth 418 m, coll. A.J. Bruce on FRV *Soela* (NTM Cr636). Female (non-ovig 23.0), 17°30.1'S 118°28.9'E, Feb 1984, trawled, 504–506 m, coll. A.J. Bruce (NMT Cr639). Male?, (18.0), 19°25.2'S 119°11.8'E, 4 Feb 1984, trawled 356 m, coll. A.J. Bruce on FRV *Soela* (NTM Cr640). Female (non-ovig 21.0), 17°16.3'S 119°01.5'E, 3 Feb 1984, trawled 458 m, coll. A.J.

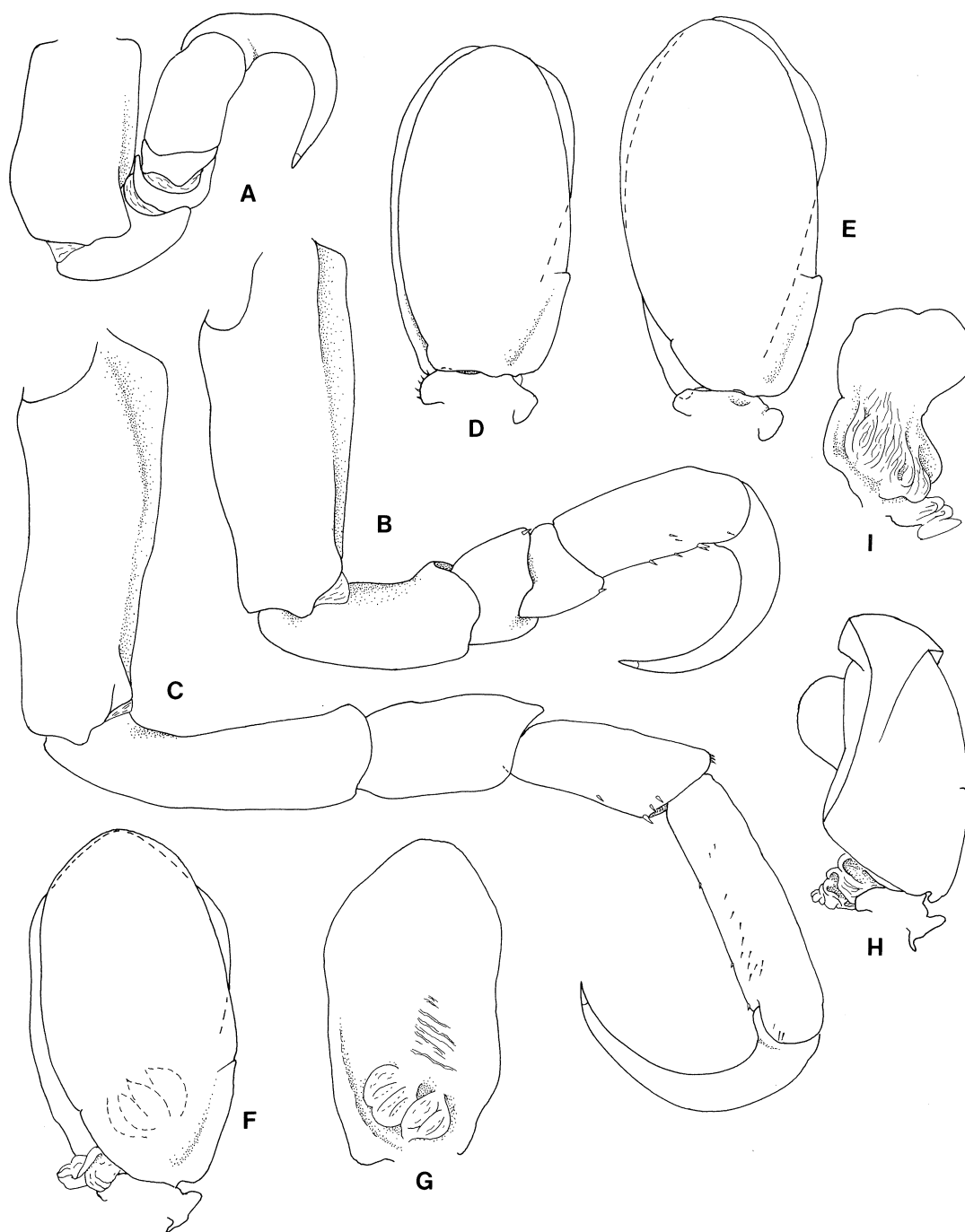


Fig. 25. *Anilocra longicauda*, female 39.0 mm ex *Priacanthus* (AM P36286). **A**, pereopod 2; **B**, pereopod 6; **C**, pereopod 7; **D-F**, pleopods 1 to 3 respectively; **G**, pleopod 3 endopod, posterior view; **H**, pleopod 5; **I**, pleopod 5, posterior view.

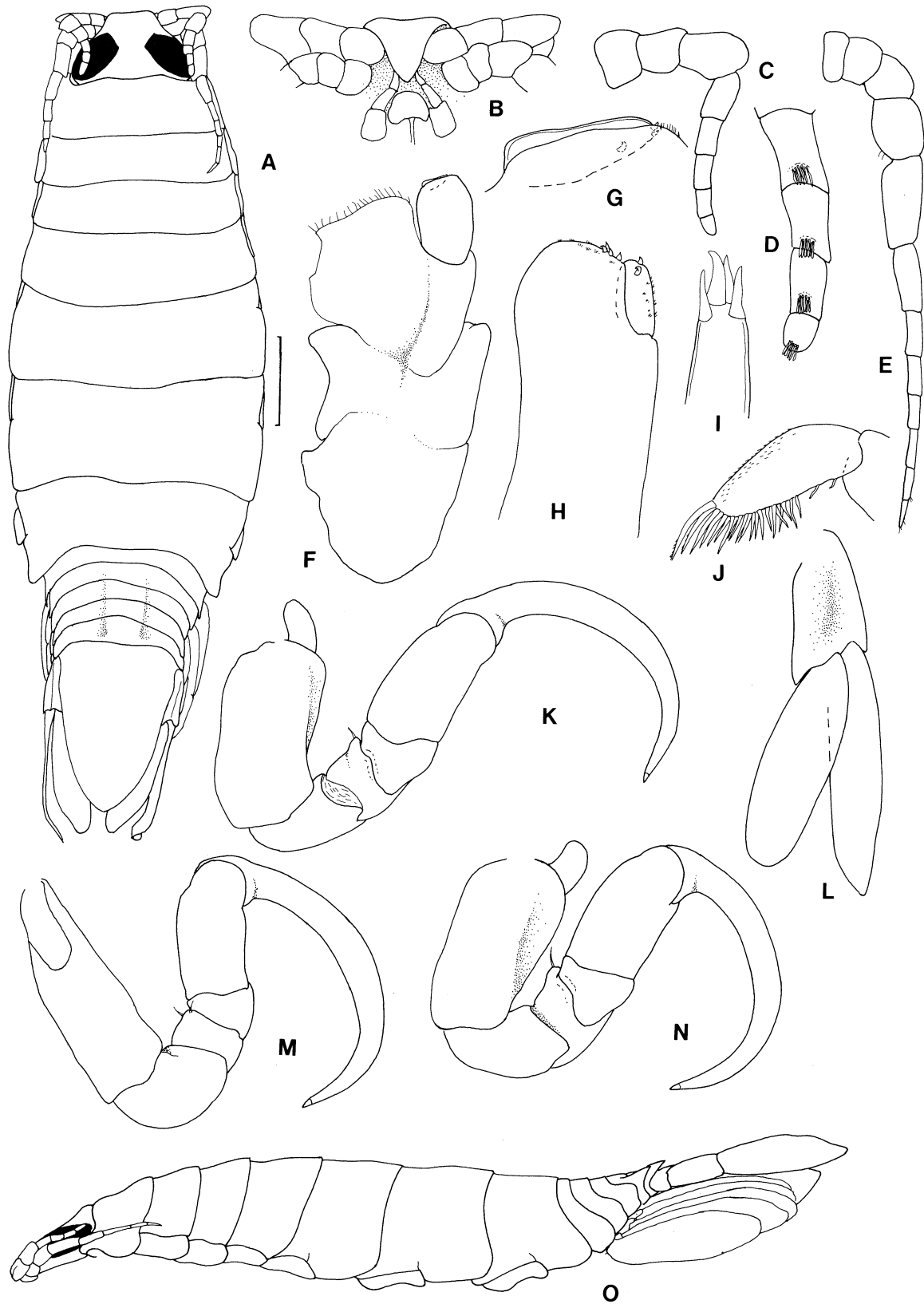


Fig. 26. *Anilocra ankistra* n. sp., A, B, O, holotype, remainder female 36.0 mm (WAM 603-85). A, dorsal view; B, frons; C, antennule; D, antennule, ventral surface of articles 5 to 8; E, antenna; F, maxilliped; G, maxilliped article 3; H, maxilla; I, maxillule apex; J, mandible palp article 3; K, pereopod 1; L, uropod; M, pereopod 4; N, pereopod 2; O, lateral view. Scale line represents 5.0 mm.

Bruce on FRV *Soela*, (NTM Cr642). Female (non-ovig 22.0), 18°41.6'S 117°18.6'E, 25 Apr 1983, trawled 360–320 m (NTM Cr4247). Female (non-ovig 31.0), 18°06.5'S 117°45'E, 7th Apr 1982, depth 472–520 m, coll. M. McGrouther & J. Paxton on FRV *Soela*, (AM P36269).

Type locality. North West Shelf of Western Australia, 15°10.4'S 121°04.7'E.

Description of female. Body slightly more than 3

times as long as wide; dorsum only moderately vaulted. Coxae 2–4 broad, subrectangular, coxae 5–7 posteriorly rounded. Cephalon dorsal surface flat; rostrum prominent, anterior margin slightly indented. Eyes about 0.7 width of cephalon, facets distinct. Pleonites all visible; lateral margins not produced; dorsal posterolateral angles of pleonites 4 and 5 weakly produced, acute. Pleotelson flat, lateral margins not

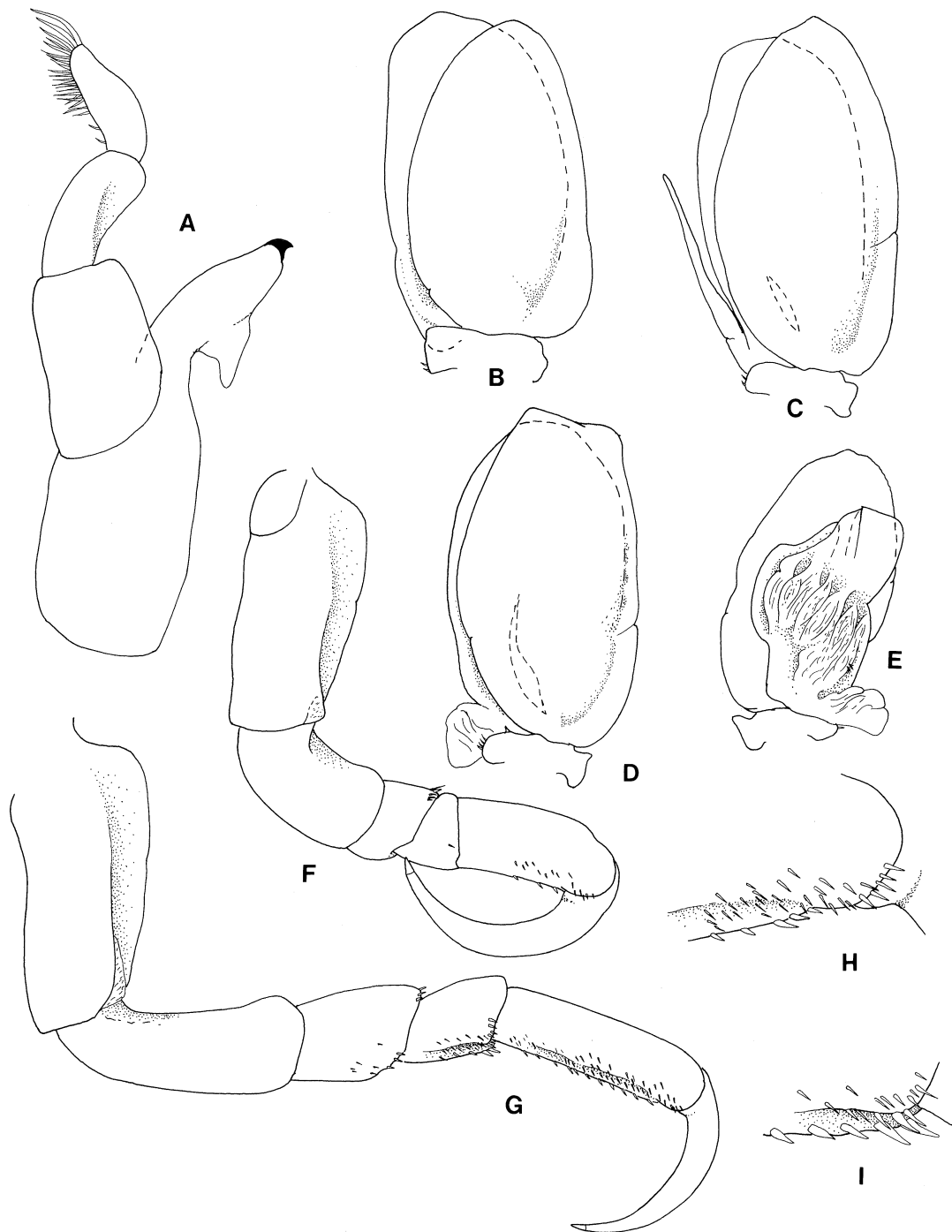


Fig. 27. *Anilocra ankistra* n. sp., female 36.0 mm (WAM 603-85). **A**, mandible; **B–D**, pleopods 1 to 3 respectively; **E**, pleopod 5, posterior view; **F**, pereopod 6; **G**, pereopod 7; **H**, pereopod 7 propodal palm, detail; **I**, pereopod 7 merus, detail.

upturned, converging smoothly to caudomedial point.

Antennule extending to posterior of cephalon; anterodistal angle of article 3 produced. Antenna composed of 12 articles, extending to pereonite 3; articles 6–12 elongate.

Mandible incisor recurved; palp article 3 elongate, lateral margin with 25 stout setae, distal setae longest. Maxillule with 4 terminal spines. Maxilla lateral lobe with 4 spines, medial 2. Maxilliped article 3 small, largely concealed in ventral view by article 2; provided with 3 recurved spines.

Pereopods 1–4 with dactylus about twice as long as propodus; pereopods 5–7 with dactylus progressively decreasing in length. Pereopod 1 basis slightly longer than propodus, basis of pereopods 2–7 becoming progressively longer towards posterior. Pereopod 7 carpus and propodus medial margins with abundant small spines.

Pleopod 1 with peduncle about twice as wide as long, peduncles of pleopods 2–5 about 3 times wider than long. Pleopod 2 with appendix masculina retained. Pleopods 3–5 endopods with large and convoluted proximomedial lobe; pleopods 2–4 endopod with single simple fold; endopod of pleopod 5 massively and complexly folded. Uropod rami extending clearly beyond posterior of pleotelson, exopod slightly longer than endopod, apex acute; endopod apex broadly rounded.

Male. Body about 3.2 times as long as wide; appendages similar to those of female, but pleopod 2 appendix masculina proportionally longer. As the

female of this species retains the appendix masculina, it was not possible to positively identify males.

Colour. Densely covered by chromatophores which give a dark brown appearance, extending onto ventral surface of cephalon and appendages including the ventral surface of pleopod 1.

Size. Ovigerous females: 20.0–43.5 mm; non-ovigerous: 21.0–31.0 mm; and male at 18.0 mm.

Remarks. This species is easily distinguished from all others by the large eyes, very long dactylus on the anterior pereopods, and generally weakly vaulted body shape. The elongate third mandible palp article, presence of 4 spines on the maxilla lateral lobe, and retention of the appendix masculina in the female are unique characters within the genus.

Hosts. Not known.

Distribution. Trawled from several localities on the North West Shelf of Western Australia.

Etymology. The name derives from the Greek for fishhook, *ankistron*, and alludes to the long dactyli.

Anilocra morsicata n. sp.

Figs 29, 30

Material examined. HOLOTYPE: female (23.5), off Fraser Island, south-eastern Qld, 23°28'S 153°19'E, 20 Sept 1980, depth 562 m, coll. Q.F.S. (QM W10186).

Type locality. Off south-eastern Queensland, 23°28'S 153°19'E.

Description. Body 3 times as long as wide, lateral

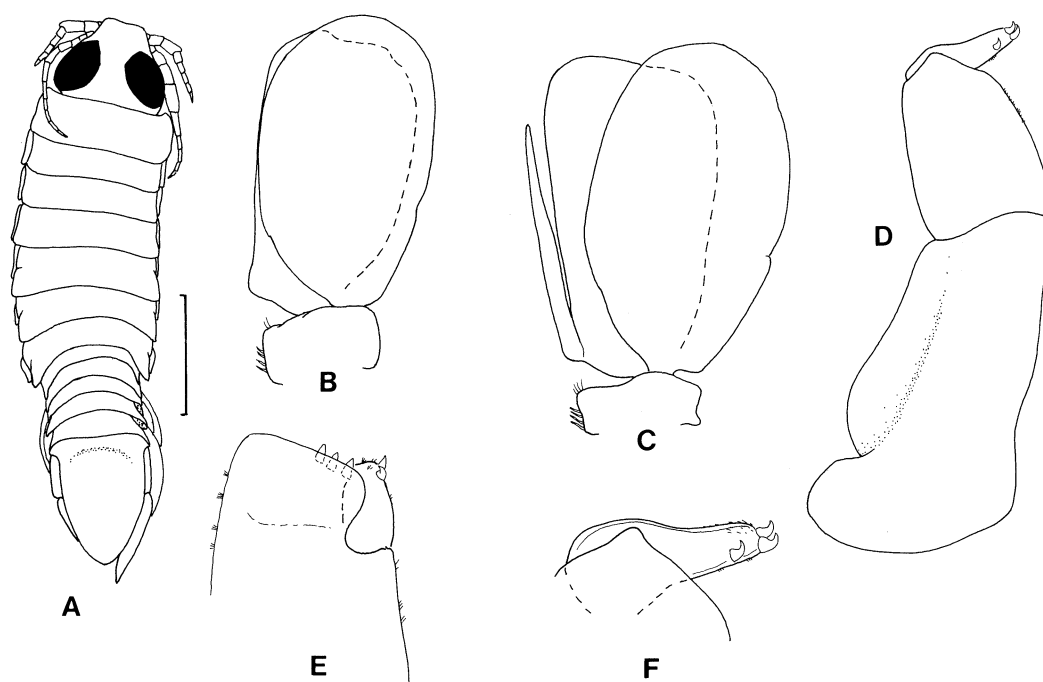


Fig. 28. *Anilocra ankistra* n. sp., ?male 18.0 mm (NTM Cr 649). A, dorsal view; B, pleopod 1; C, pleopod 2; D, maxilliped; E, maxilla apex; F, maxilliped article 3. Scale line represents 4.0 mm.

margins subparallel in dorsal view; dorsum strongly vaulted. Cephalon anterior margin wide, rostrum scarcely developed in dorsal view; eyes about 0.40 width of cephalon. Medial posterior margin of pereonites 3–7 weakly produced. Lateral margins of pleonites not posteriorly produced, not acute; posterodorsal margin of pleonites 3–5 weakly produced. Pleotelson lateral margins not turned up, posterior margin evenly

rounded; anterodorsal surface with depression.

Antennule extending to posterior of eye; article 3 not produced. Antenna with 12–14 articles, extending to pereonite 3; article 4 with plumose setae along posterior margin; articles 7–11 posterodistal margin weakly lobed.

Mandible palp article 3 not folded, distolateral margin with 10 setae; article 2 distolateral margin with 2 setae. Maxillule with 4 terminal spines. Maxilla with 2 spines

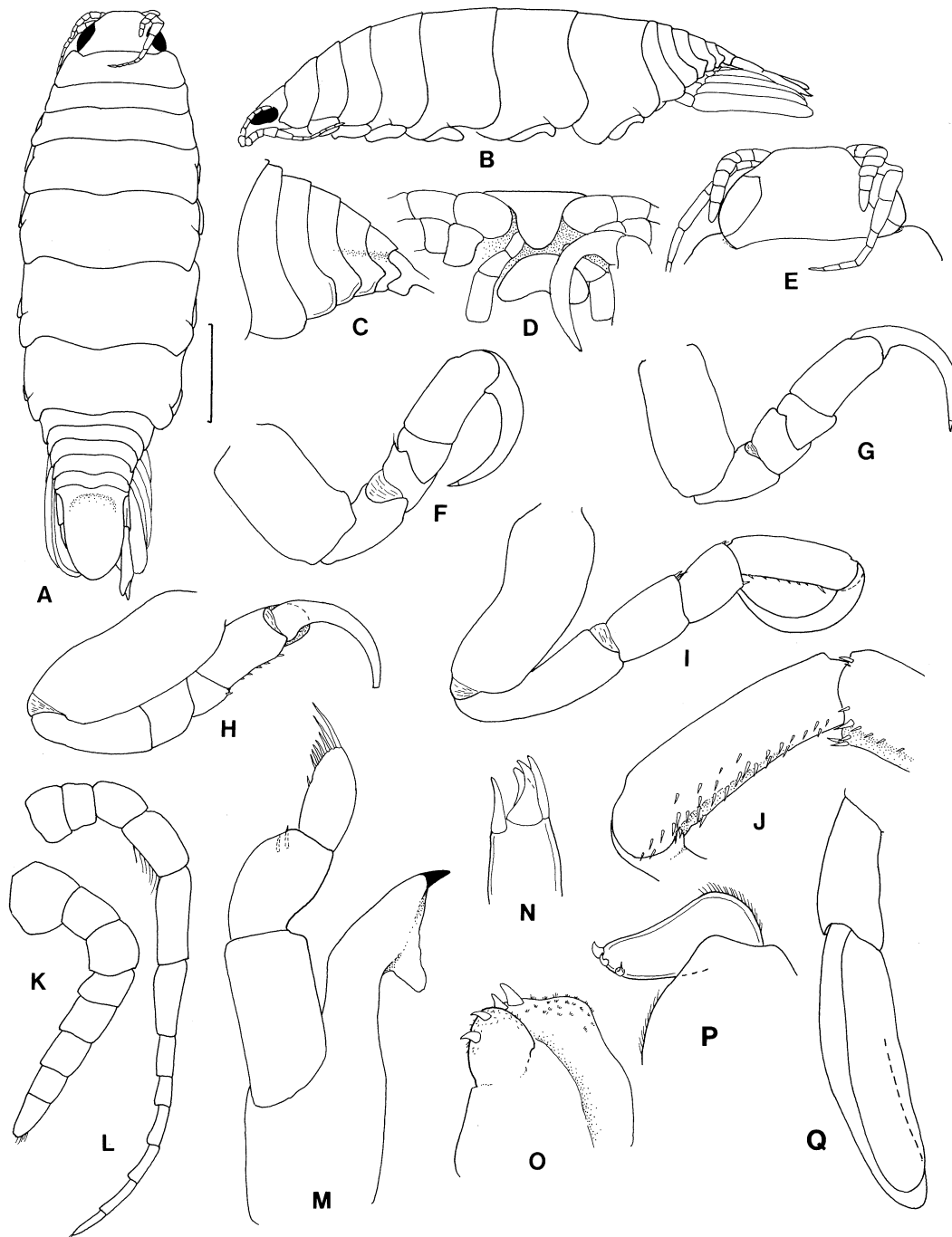


Fig. 29. *Anilocra morsicata* n. sp., holotype. **A**, dorsal view; **B**, lateral view; **C**, pleon, lateral view; **D**, frons; **E**, cephalon; **F**, pereopod 1; **G**, pereopod 2; **H**, pereopod 6; **I**, pereopod 7; **J**, pereopod 7, merus, propodus, lateral view; **K**, antennule; **L**, antenna; **M**, mandible; **N**, maxillule apex; **O**, maxilla apex; **P**, maxilliped article 3; **Q**, uropod. Scale line represents 4.0 mm.

each on medial and lateral lobes respectively. Maxilliped article 3 with 3 recurved spines.

Pereopods 1–4 dactylus without nodules, smoothly and shallowly curved; pereopods 2 and 3 similar to pereopod 1. Pereopod 7 with abundant spines on posteromedial margin to carpus and propodus. Pereopod 6 similar to 7 but articles shorter, especially merus and carpus.

Pleopod 1 rami margin converging to narrowly rounded apex. Pleopod 2 similar to 1, but vestigial appendix masculina present on endopod. Pleopod 3 with endopod shorter and more bluntly rounded than exopod, without folds. Pleopod 4 same as 3. Pleopod 5 endopod with 3 folds; peduncles of pleopods 1–5 with 4 coupling hooks. Uropods extending beyond pleotelson, exopod slightly longer than endopod; apex of endopod bluntly rounded.

Male. Not known.

Colour. Dorsal surfaces of pereon and pleon dark brown; antennule, antenna, pereopods (except basis), pleopods and uropods almost entirely unpigmented.

Size. Holotype, 23.5 mm.

Remarks. This species is most similar to *Anilocra meridionalis* Richardson (see Brusca, 1981). The differences are that *A. morsicata* has less strongly curved dactyls, more narrowly rounded rami on pleopods 1 and 2, longer and more narrowly rounded uropod rami and, most obviously, has a very short, bluntly rounded rostrum.

Hosts. Not known.

Distribution. Known only from the type locality.

Etymology. The name is derived from the Latin, *morsicatus*, to bite continually.

Anilocra pomacentri n. sp.

Figs 31, 32

Material examined. All Great Barrier Reef, Qld. HOLOTYPE: female (ovig 12.5), Wistari Reef, Capricorn Group, 25 March 1985, from *Chromis nitidus*, coll. R. Adlard (QM W12182).

PARATYPES: 2 females (11.0, non-ovig 8.0, imm 7.0), male? (6.5), same data as holotype (QM W12183). Female (non-ovig 9.5, imm 6.0), same locality and host, 3 Mar 1985, coll. R. Adlard (QM W12184). Female (ovig 10.5), male (9.8), sex indeterminate (7.5), Lizard Island, Qld, back reef, 22 Mar 1985, ex *Pomacentrus melanochir*, 10 m, coll. R. Pitcher (AM P36270). Female (non-ovig 11.5), reef pass, north end of Carter Reef, north-east of Lizard Island, 11 Feb 1986, on *Chromis atripes*, 18 m, coll. N.L. Bruce & N. Preston (AM P36285).

Additional material. Female, Waining Reef, north-east of Lizard Island, 14°30'S 145°15'E, 4 May 1985, on *Pomacentrus amboinensis*, coll. R. Pitcher (AM P36751). 3 females, Myrmidon Reef, north-east of Townsville, 18°16'S 147°27'E, 20 Feb 1986, on *Chromis margaritifer*, coll. P. Doherty (AM P36758). Palm Group, Qld series:- from *Pomacentrus melanopterus*: 2 females (ovig 15.0, 13.8), male (5.5), north-eastern point, Fantôme Island, 18 April 1986, 7 m (AM P36757); from *Pomacentrus lepidogenys*: 3 females (ovig 10.2, non-ovig 6.0, 5.5), north bay, Pelorus Island, 9 April 1986, 9 m (AM P36756); 3 females (ovig 12.5, 10.5, 10.0), north-eastern reef, Orpheus Island, 15 April 1986, 8 m (AM P36753); 2 females (ovig 15.0, 11.5), north-eastern reef, Orpheus Island, 16 April 1986, 10 m (AM P36752); from *Pomacentrus moluccensis*: 2 females (non-ovig 6.0, 6.5), north bay, Pelorus Island, 9 April 1986, 9 m (AM P36755); female (ovig 9.1), north-eastern reef, Orpheus Island, 20 April 1986, 7 m (AM P36754); also 11 uncatalogued males and juveniles from *P. melanopterus* (1), *P. lepidogenys* (2), and *P. moluccensis* (8); all coll. N.L. Bruce, R.T. Springthorpe.

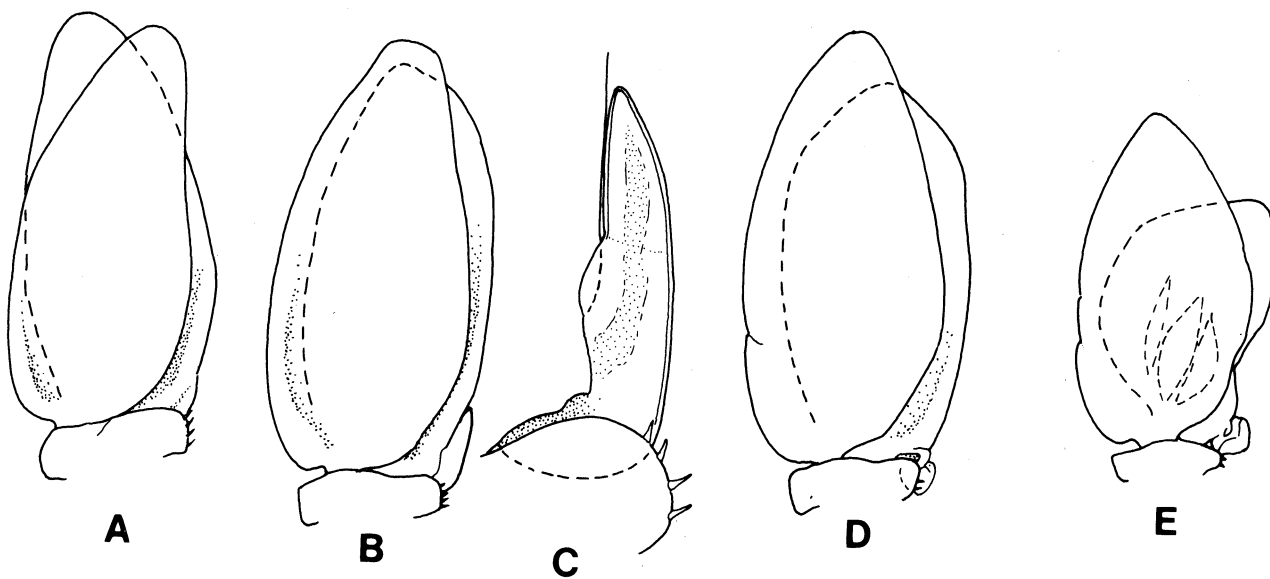


Fig. 30. *Anilocra morsicata* n. sp., holotype. A, B, D, E, pleopods, 1 to 3, 5, respectively; C, pleopod 2 endopod, proximomedial margin.

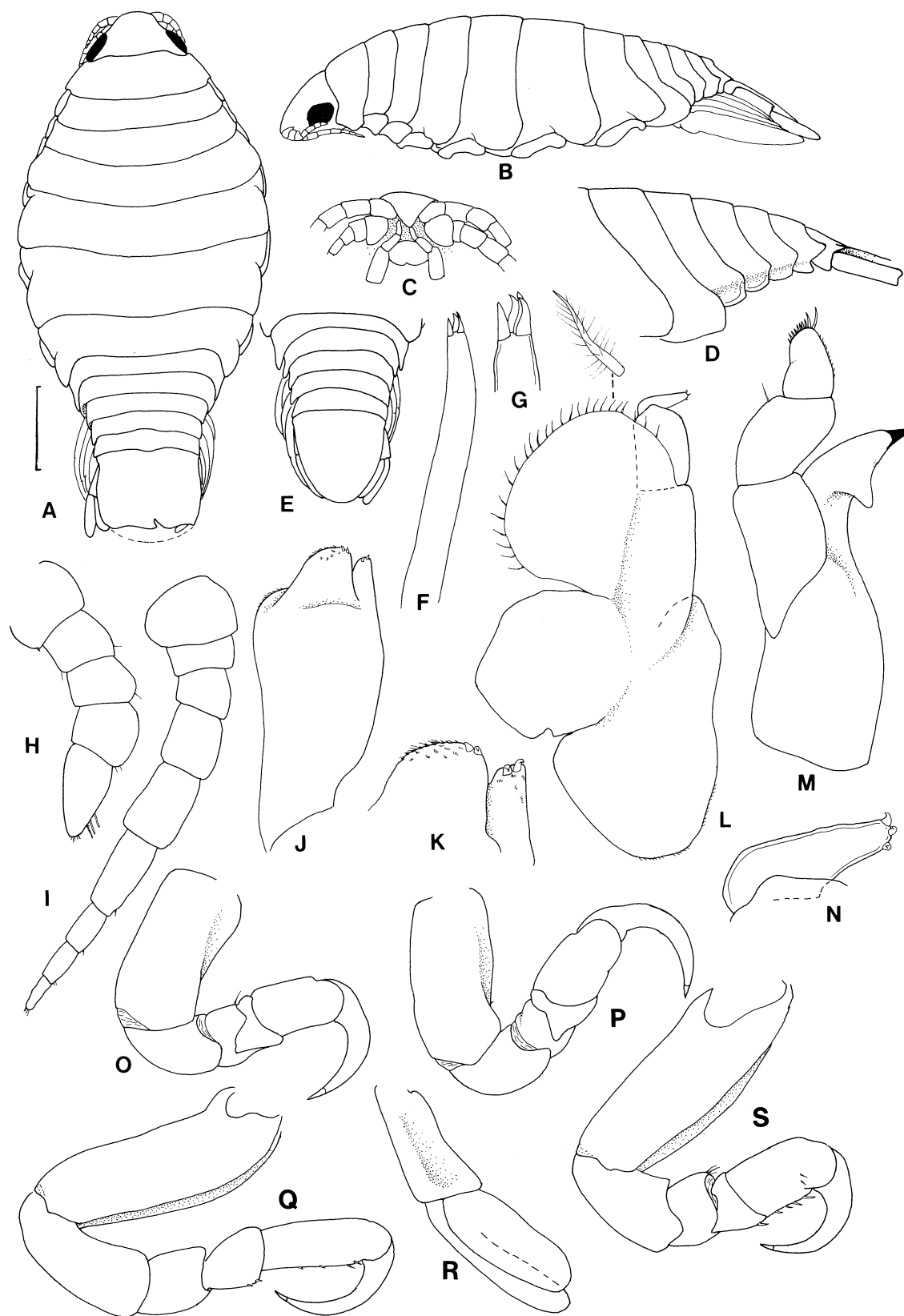


Fig. 31. *Anilocra pomacentri* n. sp., A-C, holotype; D,E, female 10.5 mm, Lizard Is. (AM P36270); remainder, female (11.0 mm, Wistari Reef (QM W12183). A, dorsal view; B, lateral view; C, frons; D, pleon, lateral view; E, pleon, pleotelson; F, maxillule; G, maxillule apex; H, antennule; I, antenna; J, maxilla; K, maxilla apex; L, maxilliped; M, mandible; N, maxilliped article 3; O, pereopod 1; P, pereopod 2; Q, pereopod 7; R, uropod; S, pereopod 6. Scale line represents 2.0 mm.

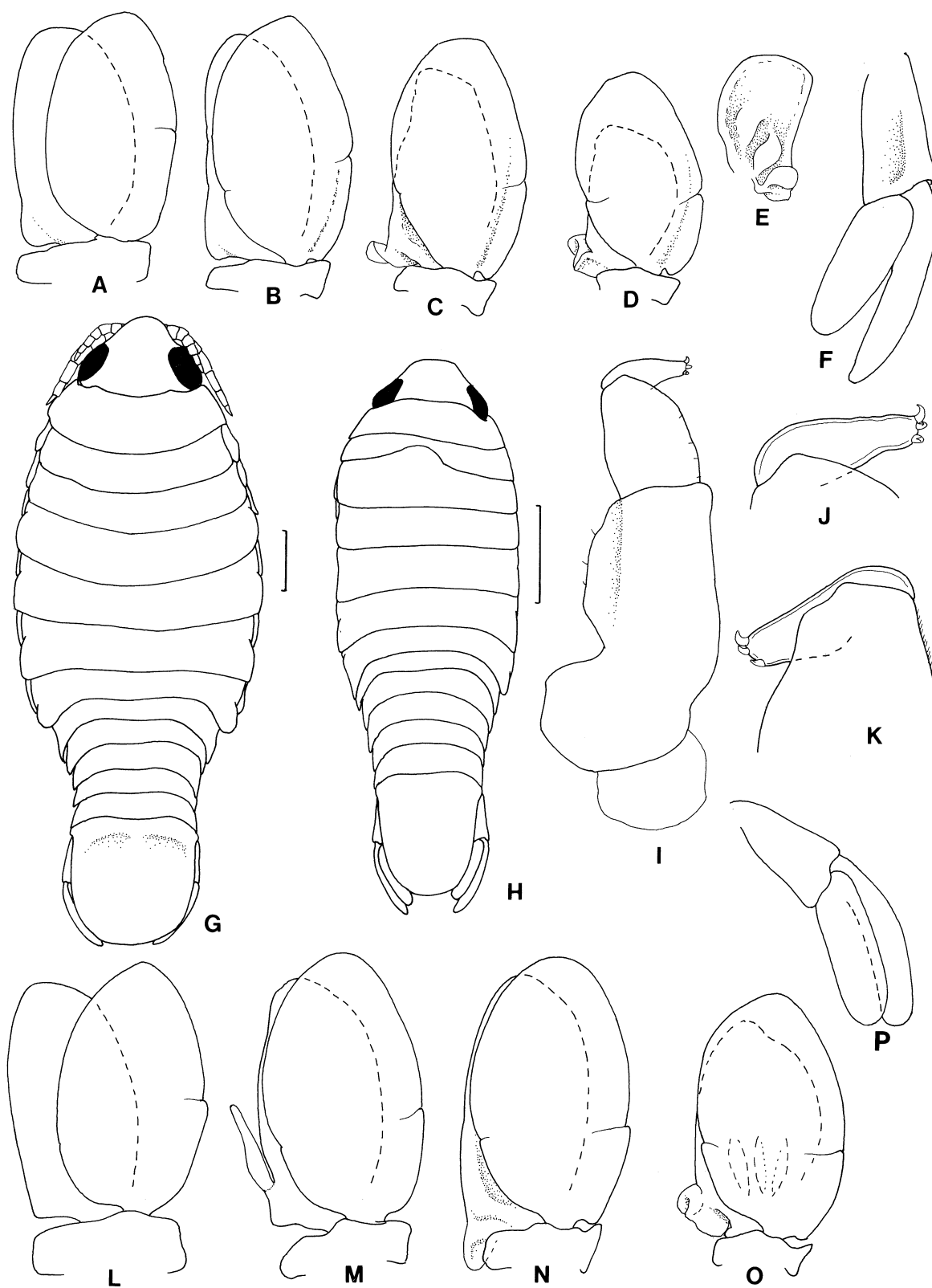


Fig. 32. *Anilocra pomacentri* n. sp., A-E, female 11.0 mm, Wistari Reef (QM W12183); F, female 9.5 mm, Wistari Reef (QM W12184); H, ?male 6.0 mm, Wistari Reef (QM W12184); remainder male 9.8 mm, Lizard Island (AM P36270). A-D, pleopods 1 to 3, 5 respectively; E, pleopod 5 endopod, posterior view; F, uropod; G, dorsal view; H, dorsal view; I, maxilliped, non-ovig female, Wistari Reef; J, maxilliped article 3, same; K, maxilliped article 3; L-O, pleopods 1 to 3, 5 respectively; P, uropod. Scale lines represent 1.0 mm.

Type locality. Wistari Reef, Capricorn Group, southern Great Barrier Reef, 23°29'S 151°53' E.

Description of female. Body about 2.0 times as long as wide. Cephalon with broad rostrum; eyes about 0.3 width of cephalon. Posterolateral angle of pereonite 1 weakly produced, forming rectangular lobe in lateral

view. Pleonites subequal in length, posterolateral margins of pleonite 1 produced, those of pleonites 2–5 not enlarged, without acute dorsal posterolateral angles. Pleotelson flat, lateral margins curving smoothly to broadly rounded posterior margin.

Antennule with 7 articles, extending to mid point of

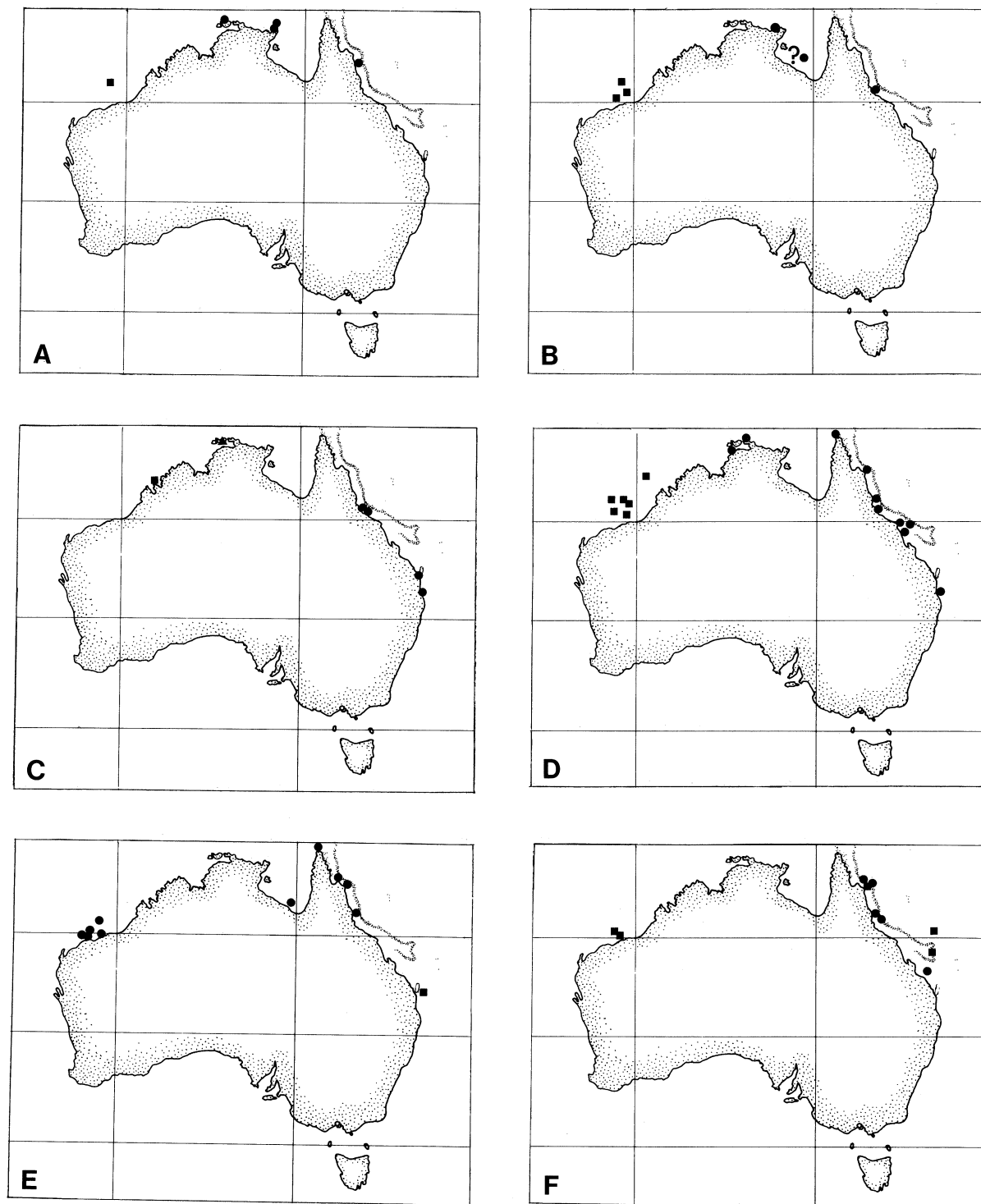


Fig. 33. Distribution of *Pleopodias* and *Anilocra* around the Australian coast. A, *Pleopodias* sp (■), *A. caudata* (●); B, *A. soelae* (■), *A. dimidiata* (●); C, *A. koolanae* (■), *A. leptosoma* (●), *A. alloceraea* (▲); D, *A. ankistra* (■), *A. apogonae* (●); E, *A. morsicata* (■), *A. nemipteri* (●); F, *A. longicauda* (■), *A. pomacentri* (●).

eye; article 3 anterodistal margin not produced. Antenna with 8–9 articles, extending to posterior of pereonite 1.

Mandible palp with about 12 setae on distal margin of article 3. Maxilla with 2 spines each on lateral and medial lobes respectively.

Pereopods 1–4 without nodules on dactylus; pereopod 1 dactylus robust, extending to carpus. Carpus and propodus of pereopod 6 with 1 and 4 small spines, pereopod 7 with 1 and 2 small spines.

Pleopods rami elongate; endopod of pleopod 5 with only 2 simple lobes; all exopods with proximomedial lobe, weakly developed on pleopods 1–2, prominent on pleopods 3–5. Uropod rami extending beyond pleotelson, exopod narrower and longer than endopod; apices bluntly rounded.

Male. Appendages similar to those of non-ovigerous female, but uropod rami subequal in length. Appendix masculina present.

Variation. Uropod exopod proportionally longer with more acute apex in non-ovigerous and immature female specimens. Antennule articles tending to fuse together; usually number is 7; antenna usually has 8 articles (7 of 9 cases). Adult females from the Palm Group have the anterior margin of the pereopod dactylus very slightly thickened.

Colour. Dorsum with dense chromatophores appearing dark brown to black, posterior of segments with thin clear band; chromatophores extending to antennule, antenna, ventral surfaces of cephalon, pereopods 1–7, pocket of brood pouch, peduncle of pleopod 1, and lateral margins of pleopods 1–4.

Size. Ovigerous females 11.0–12.5 mm, non-ovigerous females 6.0–9.8 mm.

Remarks. The lack of nodules on dactyls of pereopods 1–4, ovate body shape, flat pleotelson, and short rounded uropod rami are characters which serve to identify *A. pomacentri*.

Hosts. Recorded from *Chromis nitidus*, *C. atripes*, *C. margaritifer*, *Pomacentrus lepidogenys*, *Pomacentrus melanochir*, *P. Tamboinensis*, *P. melanopterus* and *P. moluccensis*; sight records on *Pomacentrus pavo* at Lizard Island and *Neopomacentrus violascens* at the Palm Islands. On the Great Barrier reef only one isopod per host was observed, always situated dorsally above eye.

Distribution. Carter Reef, Wainig Reef, Lizard Island, Palm Group, Myrmidon Reef, and Wistari Reef, Capricorn Group, all Great Barrier Reef.

Etymology. The name is derived from that of the most common host genus.

ACKNOWLEDGEMENTS. This study was supported by a Queen's Fellowship in Marine Science, a Queen's Fellowship Research Support Grant, and a Marine Sciences and Technologies Grant (85/1012 I). The Australian Museum is gratefully acknowledged for the provision of facilities. I also thank Lois Goldmann and the staff of Lizard Island Research Station for their assistance, Mr R.T. Springthorpe and Dr N.

Preston for their assistance with fieldwork, Dr T.E. Bowman for generously allowing me access to his cymothoid literature catalogue, Ms D. Rennis and Mr M. McGrouther for making or confirming host identifications and names, and Dr G.C.B. Poore for critically reviewing the manuscript.

Field work was undertaken at Orpheus Island (James Cook University) and Lizard Island (Australian Museum) research stations.

I thank the following for donating or lending material for study: Dr A. Anderson (NRS); Dr T.E. Bowman (USNM); Dr A.J. Bruce (NTM); Mr P.J.F. Davie (QM); Dr J. Forest (MNH); Professor L.B. Holthuis (RMNH); Mr B. Ingram (Grafton, NSW); Ms D. Jones (WAM); Dr R.G. Lester (Parasitology Department, University of Queensland); Dr G.C.B. Poore (NMV); Dr N. Preston (Griffith University, Brisbane, Qld); Mr P.J. Vaughan, (Department of Zoology, La Trobe University, Victoria: material from the 1985 Krakatua Expeditions, La Trobe University — Museum Zoologicum Bogoriense); Dr T. Ward (CSIRO); Dr T. Wolff (ZMC); Mr W. Zeidler (SAM).

References

- Avdeev, V.V., 1975a. Two representatives of parasitic isopods of the genus *Lironeca* (Cymothoidae) from the region of Australia and New Zealand. *Parasitologia* 3: 247–251.
- 1975b. A new parasitic isopod of the genus *Cterissa* (Crustacea: Cymothoidae) from the Sea of Timor. *Biologia Morya* 3: 69–73.
- 1975c. A new parasitic isopod *Tetragonocephalon lutianus* gen. et sp. nov. from the Arafura Sea. *Biologia Morya* 5: 62–65.
- 1977. Three new species of parasitic isopods (Flabellifera, Anilocridae) from the collection of the Laboratory of Parasitology of Sea Animals of TINRO. *Fisheries, Oceanography, Hydrobiology and Fish Parasitology of the Pacific Ocean* 1011: 139–144.
- 1978. Notes on the distribution of marine Cymothoidae (Isopoda, Crustacea) in the Australian-New Zealand region. *Folia Parasitologica (Prague)* 25: 281–283.
- 1979a. New species of the genus *Cymothoa* (Isopoda, Cymothoidae) from the coastal regions of north-western Australia. *Parasitologia* 13: 50–55.
- 1979b. New species of the genus *Cymothoa* Fabricius (Isopoda, Cymothoidae) from the Indian Ocean. *Parasitologia* 13: 223–234.
- 1979c. Parasitic isopods of the genus *Meinertia* from the Australian-New Zealand region. *Biologia Morya* 2: 48–54.
- 1985. Specific features of the distribution of marine parasitic isopod crustaceans of the family Cymothoidae (Isopoda, Flabellifera). In: "Parasitology and Pathology of Marine Organisms of the World Ocean." (W.J. Harger, Jr ed.) National Oceanic and Atmospheric Administration. Technical Report, National Marine Fisheries Service 25: 1–135.
- Barnard, K.H., 1925. Contributions to the crustacean fauna of South Africa. No. 9. Further additions to the list of Isopoda. *Annals of the South African Museum* 20: 381–410.
- 1936. Isopods collected by R.I.M.S. *Investigator*. Records of the Indian Museum, Calcutta 38: 147–191.
- Beumer, J.P., L.D. Ashburner, M.E. Burbury, E. Jetté & D.J. Latham, 1982. A checklist of the parasites of fishes from Australia and its adjacent territories. Commonwealth

- Institute of Parasitology Technical Communication 48: i-vi, 1-99.
- Bleeker, P., 1857. Recherches sur les Crustacés de L'Inde Archipelagique. II. Sur les Isopodes Cymothoïdiens de L'Archipel Indien. Natuurkundige vereeniging in Nederlandsche-Indie, Batavia. Verhandelingen 2: 20-40, plates 1, 2.
- Boone, P.L., 1935. Scientific results of the world cruise of the yacht *Alva* 1931, William K. Vanderbilt, commanding. Crustacea and Echinodermata. Bulletin of the Vanderbilt Museum, Huntington, N.Y. 6: 1-264, plates 1-96.
- Bovallius, C., 1887. New or imperfectly known Isopoda. Part III. Bihang till Kongelige Svenska Vetenskapsakademiens Handlingar 18, 4: 1-21, plates 1-4.
- Bowman, T.E. & I.U. Tareen, 1983. Cymothoidae of Kuwait (Arabian Gulf)(Crustacea: Isopoda). Smithsonian Contributions to Zoology 382: i-iii, 1-30.
- Bruce, N.L., 1986. Revision of the fish parasitic isopod crustacean genus *Mothocya* Costa, in Hope, 1851 (Cymothoidae: Flabellifera). Journal of Natural History 20(5): 1089-1192.
- Brusca, R.C., 1981. A monograph on the Isopoda Cymothoidae (Crustacea) of the eastern Pacific. Zoological Journal of the Linnean Society 73: 117-199.
- Brusca, R.C. & E.W. Iverson, 1985. A guide to the marine isopod Crustacea of Pacific Costa Rica. Revista de Biología Tropical 33 (Supplemento 1): i-iv, 1-77.
- Dana, J.D., 1853. Crustacea, Part II. In: "United States Exploring Expedition during the years 1838, 1839, 1840, 1841, 1842, under the command of Charles Wilkes, U.S.N." Volume 14, C. Sherman, Philadelphia, pp 689-1618.
- Desmarest, A.G., 1825. Considérations générales sur la classe des Crustacés. Paris, pp. xix, 446, 1 errata, plates 1-56.
- Edwards, A.M., 1840. Histoire naturelle des Crustacés comprennent l'anatomie la physiologie et la classification de ces animaux. III, pp. 605.
- Gerstaecker, A., 1882. Sechste Ordnung. Isopoda-Asseln [Part], pp. 97-278 In "Klassen und Ordnung des Thier-Reichs, wissenschaftlich dargestellt in Wort und Bild." (Dr H.G. Bronn ed.) Funfter Band II. Abtheilung. Gliederfüssler: Arthropoda. Crustacea. (Zweite Hälfte: Malacostraca) 4, 5, 6, 7, 8. Lieferung.
- Hale, H.M., 1926. Review of Australian isopods of the Cymothoid group. Part II. Transactions of the Royal Society of South Australia 50: 201-234, plates 26, 27.
- 1940. Report on the cymothoid Isopoda obtained by the F.I.S. "Endeavour" on the coasts of Queensland, New South Wales, Victoria, Tasmania and South Australia. Transactions of the Royal Society of South Australia 64: 288-304, plate 18.
- Haller, G. von, 1880. Über einige neue Cymothöinen. Archiv für Naturgeschichte, Berlin, Jahrbuch 46: 375-395, plate 18.
- Herklots, J.A., 1870. Deux nouveaux genres de Crustacés vivant en parasites sur des poissons. *Epichthyes* et *Ichthyoxenos*. Archiv Neerlandaise Sciences exact et naturelle, 5: 120-137, plate 5.
- Holthuis, L.B., 1978. Cymothoïde isopoden van de Nederlandse kust en de Zuidelijke Noordzee. Bijdragen Faunisteit Nederland 5: 28-33, plate 1.
- Kensley, B., 1978. Guide to the marine isopods of southern Africa. South African Museum, Cape Town, p. 173.
- Koelbel, K., 1878. Über einige neue Cymothöiden. Sitzungsberichte der Mathematisch-Naturwissenschafflichen Klasse der Kaiserlichen Akademie der Wissenschaften 78(1): 401-416, plates 1, 2.
- Kussakin, O.G., 1979. Marine and Brackish water isopod Crustacea. Suborder Flabellifera Academy of Science, U.S.S.R. Leningrad, pp. 470 [in Russian].
- Leach, W.E., 1818. Cymothoïdées. In: "Dictionnaire des Sciences Naturelle" (Cuvier, F. ed.). Volume 12: 338-354. Paris and Strasbourg.
- Linnaeus, C. von, 1758. Systeme Naturale, 10 Edition, 1. Holmia.
- Miers, E.J., 1880. On a collection of Crustacea from the Malaysian Region - Part IV. Penaeidae, Stomatopoda, Isopoda, Suctoria, and Xiphosura. Annals and Magazine of Natural History 5, series 5: 457-467.
- Monod, T., 1933. Mission Robert Ph. Dollfus en Égypt. Tanaidacea et Isopoda. Mémoires de l'Institut Égyptienne 21: 161-264.
- 1934. Isopodes marins des campagnes du "de *Lanessan*". Notes de l'Institut Océanographique de l'Indochine 23: 1-22, plates 1-45.
- 1976. Expédition Rumphius II (1975). Crustacés parasites, commensaux, etc. (T. Monod & R. Séréne, ed.). III. Crustacés Isopodes (I^{re} partie: Corallanidae, Anilocridae, Cymothoidae). Bulletin du Muséum National d'Histoire Naturelle, 3 série, 391, Zoologie 273: 853-870.
- Nierstrasz, H.F., 1915. Die isopoden-sammlung im Naturhistorischen Reichsmuseum zu Leiden. - 1. Cymothoidae. Zoologische Mededeelingen, Rijksmuseum van Natuurlijke Historie te Leiden 1: 71-108, plates 3, 4.
- 1918. Alte und neue isopoden. Zoologische Mededeelingen, Rijksmuseum van Natuurlijke Historie te Leiden 4: 103-142, plates 9, 10.
- 1931. Die Isopoden der Siboga-Expedition. 3. Isopoda Genuina. 2. Flabellifera. Siboga Expeditie 32c: 123-233, plates 10, 11.
- Pillai, N.K., 1954. A preliminary note on the Tanaidacea and Isopoda of Travancore. Bulletin of the Central Research Institute, University of Travancore, (C) 3: 1-21.
- 1963. Two new genera of parasitic isopods from Kerala. Journal of the Zoological Society of India 15: 66-72.
- Richardson, H., 1905. A monograph on the isopods of North America. Bulletin of the United States National Museum 54: 1-727.
- 1910. Marine isopods collected in the Philippines by U.S. Fisheries steamer *Albatross* in 1907-1908. Department of Commerce and Labor, Bureau of Fisheries Document 736: 1-44.
- 1911. Les crustacés isopodes du *Travailleur* et du *Talisman*; formes nouvelles. Bulletin du Muséum National d'Histoire Naturelle, Paris 17: 518-534.
- Séréne, R., 1937. Inventaire des Invertébrés marins de l'Indochine (I^{re} liste). Notes de l'Institut Océanographique de l'Indochine 30: 1-83.
- Schiodte, J.C. & Fr. Meinert, 1881. Symbolae ad monographiam cymothoarum crustaceorum isopodum familiae. II. Anilocridae. Naturhistorisk Tidsskrift Series III 12: 1-166, plates 1-10.
- 1883. Symbolae ad monographiam cymothoarum crustaceorum familiae. III. Saophridae. IV. Ceratothoinae. Naturhistorisk Tidsskrift, Series III, 13: 281-378, plates 11-16.
- 1884. Symbolae ad monographiam cymothoarum crustaceorum isopodum familiae. IV. Cymothoidae Trib.

- II. Cymothoinae. Trib. III. Lironecinae. Naturhistorisk Tidsskrift Series III, 14: 221-454, plates 6-13.
- Stebbing, Rev. T.R.R., 1900. On Crustacea brought by Dr. Willey from the South Seas. In "Zoological Results Based on Material from New Britain, New Guinea, Loyalty Islands, and Elsewhere, Collected during the Years of 1895, 1896 and 1897" (A. Willey ed.) 5(33): 605-690. University Press, Cambridge.
- 1905. Report on the Isopods collected by Professor Herdman at Ceylon, in 1902. In "Report to the Government of Ceylon on the pearl oyster fisheries in the Gulf of Manaar". (W.A. Herdman ed.). Volume 4, Supplements report 23: 1-64.
- 1924. Crustacea of Natal. Fisheries and Marine Biological Report No. 3 for the year 1922, 3:1-15, plates 11-16.
- Trilles, J.-P., 1975a. Les Cymothoidae (Isopoda, Flabellifera) des collections du Muséum National d'Histoire Naturelle de Paris. II. Les Anilocridae Schiödte et Meinert, 1881. Genres *Anilocra* Leach, 1818, et *Nerocila* Leach, 1818. Bulletin du Muséum National d'Histoire Naturelle, Paris, 3^e série, 290, Zoologie 200: 303-340, plates 1, 2.
- 1975b. Les Cymothoidae (Isopoda, Flabellifera) des côtes françaises. II. Les Anilocridae Schiödte et Meinert, 1881. Genres *Anilocra* Leach, 1818, et *Nerocila* Leach, 1818. Bulletin du Muséum National d'Histoire Naturelle, Paris, 3^e série, 290, Zoologie 200: 347-378, plate 1.
- 1979. Les Cymothoidae (Isopoda, Flabellifera; parasites de poissons) du Rijksmuseum van Natuurlijke Historie de Leiden II. Afrique, Amérique et régions Indo-Ouest-Pacifique. Zoologische Mededeelingen, Rijksmuseum van Natuurlijke Historie te Leiden 54: 245-275.
- Trilles, J.-P. & J.C. Vala, 1975. Sur trois espèces de Cymothoidae de la Gaudeloupe. Bulletin du Muséum National d'Histoire Naturelle, Paris, 3^e série, 318, Zoologie 225: 967-976.
- Williams, E.H. Jr. & L.B. Williams, 1980. Four new species of *Renocila* (Isopoda: Cymothoidae), the first reported from the New World. Proceedings of the Biological Society of Washington 93: 573-592.
- Williams, L.B. & E.H. Williams, 1981. Nine new species of *Anilocra* (Crustacea: Isopoda: Cymothoidae) external parasites of West Indian coral reef fishes. Proceedings of the Biological Society of Washington 94: 1005-1047.

Accepted 30th June 1986